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ABSTRACT

Earlier observations on U.S. infant health and survival as compared with other Western industrial democracies are extended in a study of preventive health services for children from infancy through adolescence and to the social benefit programs that support their families. This report looks at the condition of children in 10 European countries (Belgium, Denmark, France, Germany, Ireland, The Netherlands, Norway, Spain, Switzerland, and the United Kingdom), all of which have better infant survival rates than the United States and all of which share elements of pluralism in their systems of health care. Issues addressed are: mortality and immunization rates; the effectiveness of barriers to preventive health care; organization and delivery of care; family support systems; policy implications for the United States (financing health care, community providers, tracking and linkage). It is shown that broadly defined preventive health care for children not only improves their health, but also can be provided effectively in a variety of settings. The survey instrument and various related tables and figures are appended. Contains approximately 160 references. (LB)

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Preventive Health Care for Young Children:

*Findings from a 10-Country Study and
Directions for United States Policy*

Bret C. Williams, M.D., M.P.H.
C. Arden Miller, M.D.



National Center for Clinical Infant Programs

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Foreword

There are many mysteries about children and children's health. We do not fully understand cancer, or AIDS, or even the common cold. On the other hand, there are many things about child health and development which we understand very well indeed. We understand how to prevent measles, whooping cough, and polio. We understand how to minimize the likelihood that children will be killed in accidents involving automobiles. We understand how to care for a pregnant woman so that her child will get off to a healthy start in life. We understand the roles played by proper nutrition, by immunization, and by prompt medical treatment of illness and injury.

We further understand, sometimes to our horror and anger, and always to our shame, that children in the United States are far less likely to benefit demonstrably from our understanding of their health-related needs than are their counterparts in western European nations, for whom important indicators of health and survival for young children and adolescents are more favorable:

- Childhood mortality rates are higher in the United States than in Europe at all age levels, most markedly among 1-4 and 15-19 year olds.
- Immunization rates for U.S. preschoolers are lower than in Europe.
- U.S. children are less likely to have a regular source of medical care than their European counterparts.
- U.S. children are far more likely than children in Europe to experience injury-related deaths.

In 1987, the National Center for Clinical Infant Programs welcomed the opportunity to publish C.

Arden Miller's monograph, *Maternal Health and Infant Survival*, an analysis of medical and social services to pregnant women, newborns and their families in ten European countries, with implications for policy and practice in the United States. In 1991, we are equally honored to publish *Preventive Health Care for Young Children* by Bret C. Williams and C. Arden Miller, a work which will do for older infants and young children what the earlier monograph accomplished with respect to the prenatal and neonatal periods.

Williams and Miller's new report reminds us that full availability of health care for children and social benefits programs for families came about in Europe only after earlier selective approaches failed. The ten countries Williams and Miller studied now spend a smaller share of their gross national products on health care than does the United States. Yet participation of children in preventive health care is nearly complete, and national systems assure financial coverage of the entire population without means testing.

Comprehensive and continuous care does not mean that all services are rendered by one provider or under one roof. European countries rely on home visiting programs, child health centers, and school health programs, as well as private physicians, to deliver preventive care. Tracking the health of children from birth to age four may be accomplished by home visitors or computerized with personal follow-up. The important thing is that children, and their families, are attended to, not abandoned. There is, to borrow a phrase from the French, "a welcome for every child."

This positive approach to childhood and to families deserves the attention of everyone concerned about

the United States' health care system. How can we change from the present deficit model—looking at failure and disease as if they were the “fault” of the victim? We need a positive, welcoming model to encourage children and families to seek preventive care. Only with a successful preventive model can we ever afford the technological medicine we have. At present, our approach—treatment after pathology is established—is not only failing, as demonstrated by Williams and Miller, but it is beyond our capacity to finance. Our medical system has failed, and the most vulnerable members of our society, our children and our poor, are crying out for help.

While their passionate concern for the well-being of children is apparent throughout this report, Williams and Miller scrupulously respect the limitations of research on the effects of preventive health care. They recognize that establishing clear and direct linkages between prevention strategies and specific health outcomes is difficult—in part because of lack of participation. The authors also resist a narrow focus on health care services. They emphasize that general policy reforms, resulting in alleviation of poverty and the reduction of unintended pregnancies, are the first essential steps to improved health status in children.

It would have been easy enough for Williams and Miller simply to write a resounding indictment of a failed system of children's health care in the U.S. But by going beyond this first step they have started us on the path towards the effective remediation of the breakdowns in this system. *Preventive Health Care for Young Children* provides a blueprint for forging the structure needed to protect U.S. children from what the authors call the “pernicious deprivation” facing so many of them today.

The directions for U.S. policy suggested by Williams and Miller are very much in tune with the themes of our individual work and the concerns of the National Center for Clinical Infant Programs. National government does have a responsibility “to engage in explicit policy formation, to finance, organize, plan, set standards, and to monitor child health.” State and local governments also have important roles in sponsoring the range and scope of services needed to reach all children and families in our pluralistic and culturally diverse nation. And advocates for children and families, like us, have a responsibility as a voice for change. If we do not speak out, we, our children, and our nation are headed for deeper and deeper trouble.

As Williams and Miller point out, we do not need to look only to Europe for models. European patterns of recommended preventive and well-child care are not strikingly different from those proposed by professional groups and public health agencies in the U.S. Moreover, in local, state and regional health care initiatives from South Carolina to Utah, and in established (but still underfunded) nationwide programs like Head Start, EPSDT, and WIC, we can find both inspiration and evidence of effectiveness.

There is in our field an oft-used analogy explaining the difference between primary and secondary prevention efforts. While secondary prevention, it is said, can be likened to keeping an ambulance parked at the bottom of a wildly curving mountain road, primary prevention requires that we straighten the road so that the ambulance is no longer needed. In their broadly conceptualized view of prevention, and through their clear vision of the specific linkages needed among a network of child health-oriented resources, Williams and Miller have laid the foundation for that straight road to improved health outcomes for U.S. children.

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Summary

Infant health and survival in the U.S. compare unfavorably with other Western industrial democracies. Circumstances that contribute to favorable pregnancy outcomes in other countries include nearly complete participation of pregnant women in early prenatal care and linkage of care to extensive support benefits (Miller, 1987). The study reported here extends these earlier observations to preventive health services for children from infancy through adolescence and to the social benefit programs that support their families.

This report looks at the condition of children in 10 European countries: Belgium, Denmark, France, the Federal Republic of Germany, Ireland, the Netherlands, Norway, Spain, Switzerland, and the United Kingdom. All of these countries have better infant survival rates than the U.S., and they all share elements of pluralism in their systems of health care.

Children's Health Status

Mortality Rates

Survival rates for children are improving in all industrialized nations, but progress is more rapid in Europe than in the U.S. Survival rates for all children through 19 years of age are more favorable in the study countries than in the U.S.

Sudden infant death syndrome (SIDS)—unexplained death during a child's first year—is the leading cause of post-neonatal death in the U.S. The frequency of SIDS and its risk factors is higher in the U.S. than in Europe.

Excess U.S. deaths among children are largely due to injury, and are concentrated among 1- to 4- and

15- to 19-year-olds. Automobile-related deaths are common in both age groups, largely to pedestrians as young children and to automobile occupants as teenagers. Other major causes of excess injury death among young U.S. children result from intentional violence or neglect; inadequate supervision contributes heavily to fatal burns, drownings, and falls. Nonautomobile-related deaths among U.S. teenagers are due overwhelmingly to violence, often with handguns.

Immunization Rates

Other important indicators of child health also favor European children. The most recent data on immunization rates among preschool children reveal that U.S. rates lag behind European rates by 23 to 49%. Failure of a high proportion of U.S. preschool children to have routine immunizations suggests not only that they are vulnerable to outbreaks of preventable infection such as measles, but that many of them also fail to receive other forms of well-child care such as developmental assessment and anticipatory guidance.

Organization and Delivery of Care

Sources of Care

Another important measure of children's health is access to a regular source of medical care. About 15% of poverty-level U.S. children have no regular source of care. Among U.S. children with a regular source of care, from 16 to 34%—varying with poverty status and place of residence—depend on institutional

settings, including hospital emergency rooms. The extent to which these institutional providers emphasize preventive care is completely conjectural.

It is almost unheard of for a young European child to lack a regular source of care. Linkages are facilitated by home visiting to newborns in most countries, with infants in some countries enrolled on the panel of a physician who cares for family members; in others, families are encouraged to select a pediatrician. Some variation exists among the study countries, but the prevailing pattern (six countries) is for separate, dedicated systems of community clinics to provide most preventive and routine well-child care. The family physician or pediatrician usually takes care of illness and special problems. The schedule for well-child immunizations is a little different in each country but European countries have a consistently high proportion of children (in excess of 90% in the first year of life) who comply. By age 3 or 4, nearly all European children are enrolled in public preschools that incorporate or are clearly linked with programs of preventive health care.

All health services to children in Europe, whether at home, in clinics, or in physicians' offices, are rendered without fee payment or proof of payment required at the time and place of service delivery. All health care for children is financed under national systems that assure financial coverage of the entire population without means testing.

Family Support Systems

In the study countries, supports for families with children are extensive: paid parental leaves prenatally and in the early months of life; relatively easy access to child care; high rates of enrollment in preschools; monthly cash payments in the form of children's allowances beginning at birth and continuing until at least age 16; access to the full range of health care without patient payment; free education and low-cost higher education for those who qualify; and preventive health care routinely provided in association with school beginning at age 3 or 4.

All of these benefits are available to everyone without means testing. Additional benefits are available for the unemployed, the handicapped, or for otherwise vulnerable populations. Nearly all those eligible for European benefit programs participate. As a result, income transfers and tax benefits in Europe combine

to alleviate poverty among households with children at least twice as effectively as U.S. programs.

Policy Implications for the U.S.

Some issues specific to children's health must be addressed in the U.S. through general policy reforms. These issues are of critical importance to children; they also affect larger populations. Alleviation of poverty is an important example. Unless income transfers and tax benefits are adjusted to reduce poverty to the greatest extent possible and equitably across all age groups, services intended to compensate for pernicious deprivation among children will continue to face nearly impossible tasks.

Another example is the reduction of unintended pregnancies. The unwanted children who result from many of these pregnancies carry a heavy burden of neglect, ill health, and excess mortality. A social policy that fails to address unwanted childbearing escalates the need for subsequent supports for children and young families. Unintended childbearing, especially among teenagers, is much less common in Europe than in the U.S.

Financing Health Care

The removal of economic barriers to health care for children and childbearing women is high on the list of urgently needed U.S. reforms. Current approaches feature expansion of Medicaid eligibilities and benefits to include larger numbers of low-income and near-poverty children and pregnant women. This initiative will help hospitals solve their problems of uncompensated care, but it may do little to improve the health of low-income women and their infants. Nearly all childbearing already occurs in hospitals, and no evidence supports the hope that medical insurance, either public or private, stimulates growth of the kind of comprehensive community health services that are known to improve pregnancy outcomes or assure preventive care for children.

In some areas, expanded Medicaid eligibility has increased the demand for comprehensive prenatal care without increasing community capacity to provide it. Obviating out-of-pocket payment for health care does not assure participation for people unable to find suitable providers. Geographic, cultural, and social barriers are substantial; providers are non-existent in many inner-city and rural areas.

Community Providers

The community health center initiatives of the 1960s under the Office of Economic Opportunity and Title V of the Social Security Act—Children and Youth (C & Y), and Maternal and Infant Care Projects (MIC)—showed high promise for reaching underserved people, but fell victim to ideologic and fiscal retrenchments. Successive waves of New Federalism featured a minimalist view of federal responsibility for sponsoring health services; funding for publicly financed clinics in the U.S. steadily eroded.

In contrast to this U.S. trend, public sector clinics in the study countries deliver most preventive and well-child care, and public clinics serving low-income or minority populations exist where needed. Many of the European study countries also have extensive private sector care, and the domains blend, as they do in this country; private physicians may be paid with public funds, and public clinics may be staffed in part by private physicians working under contract. No matter what the mix and blend of provider systems and sponsorship, the prevailing standards assume that no European children are overlooked.

Tracking and Linkage

In the U.S., nearly all infants are born in hospitals and all births are registered with official agencies when birth certificates are filed. Five years later, nearly all children register for enrollment in public schools. In between these mooring points many children are at sea—perhaps nurtured by caregivers who secure private or public care that addresses the full range of young children's health needs, but perhaps not. The 1- to 4-year age group represents the nation's biggest hiatus in societal oversight for the well-being of children. The first year or 2 of school at ages 5 and 6 becomes a sorting-out period to identify and cope with the accumulated neglect of health and developmental problems that might have been identified and rectified at a younger age.

European countries provide better oversight for young children. Tracking systems are uniformly begun at birth and are consistently rooted in health care. Notification of local health authorities, registration with a physicians' panel, expanding the roster for health visitors, issuance of computerized punch cards—all these strategies begin at birth and are designed to assure continuing participation of the infant in one or more systems of health care. As early as 2 years of age,

transition to tracking in the educational system, or to health clinics associated with schools, may occur—but tracking always begins with the health care system.

There are important lessons to be learned from these countries; attributes of their health systems worthy of U.S. consideration include:

1. Access to one or more provider systems that assure compliance with routine preventive services and linkage to more sophisticated care when necessary;
2. Separation of preventive services from the delivery of acute medical care, allowing the former to be rendered by less specialized personnel;
3. No means testing or payment required at the time of service delivery;
4. Linkage of families with children to benefit programs that alleviate poverty equitably across age groups;
5. Access of very young children to low-cost regulated programs for children of working parents;
6. A tracking system for children from birth through age 4—either labor intensive as with home visitors, or computerized with personal follow-up—in order to assure that young children and their families actively participate in health and social programs for which they are eligible.

Recommendations for a nationally consistent and universal system of tracking 1- to 4-year-olds in the U.S. confront enormous and diverse problems. Current initiatives invite attention as the basis for more broadly applied policies. The two institutions that most nearly approach full involvement with children are health departments and schools. They represent a potential sequence of responsibility for tracking children and linking them to appropriate services. Some policy propositions concerning expanded roles for these institutions are best formulated as queries:

How can health departments or their contractors be strengthened in order to monitor participation of all young children in appropriate health services?

Such a mission does not require that all departments render direct services beyond facilitating the work of other provider systems, including the private domain and community health centers under federal sponsorship. Birth registrations might be accompanied by certification designating the provider with responsibility for continuing care of the infant. Both the designated provider and the official public health agency would be advised of that responsibility and the public agency would be obliged to confirm compliance with it. When compliance fails, the health agency would assume

responsibility for making alternative arrangements. Those arrangements, according to local circumstances, might oblige some departments to expand clinics for well-child care and oblige others to provide a full range of comprehensive health care, or to facilitate other private or public initiatives.

How can school systems merge attempts to implement high-risk tracking with a responsibility to institutionalize Head Start?

If the age of educational responsibility for children were lowered, school supervision might blend with the tracking and service roles of health departments, thus closing the gap in societal oversight of young children. Case managers attached to both institutions could facilitate linkages with the complex support agencies that are required by some children who have special needs, and by many more children intermittently.

How can this vision, or any other that addresses the neglect of young children, be protected against future erosion?

The problem with money earmarked for children, as with political will, is that it fluctuates with time. Other priorities take precedence in the dynamics of social policy negotiated among competing interest groups. Nowhere is that fluctuation more apparent than in

publicly sponsored preventive health care for children. Public programs are well documented both for quality and economic effectiveness—when they are adequately financed. Support tends to leak away early in the trade-offs for funding at times of economic restraint. Some durable measures are required to protect against these retrenchments.

In an effort to maintain support for children's programs through fluctuations in political ideology and in public finance, Sugarman has proposed a Children's Trust Fund (Sugarman, 1988). It is a strategy of proven effectiveness for the elderly and even for the federal highway system. Sugarman suggests that a small additional employer and employee payroll withholding be administered through Social Security mechanisms, sufficient to generate \$20 billion per annum, earmarked for support of children's health services.

Other sources of financing a children's trust fund should be considered. A set-aside of a portion of Medicaid funds and a surcharge on private health insurance premiums could channel money into the trust fund. In that way both public and private health insurance could be used not only to finance child health services, but to assure that the community infrastructure of services is available where needed.



Introduction

Concern is widespread that in the United States the health of infants, children, youth, childbearing women, and their families is below par and that their health status trends are worsening (Miller, Fine, & Adams-Taylor, 1989). International comparisons, especially with reference to data on infant and child survival, indicate that other Western democracies do better than the U.S. in the protection and care of these vulnerable populations. This circumstance is not new. Silver wrote in 1978: "In child health the United States is shamefully behind nearly every other economically and industrially advanced country in the world" (p. 3).

Areas of Comparison

An earlier study on perinatal care in selected Western European countries examined circumstances that enable those countries to achieve records of infant survival superior to the U.S. (Miller, 1987). Relevant circumstances in Europe included nearly full participation in early and continuous prenatal care. The report emphasized that such care was made possible by:

- establishing easily understood and readily available provider systems;
- removing all barriers, especially economic ones, to the full range of services embraced by those systems; and
- linking prenatal care to comprehensive social and financial benefits that enable pregnant women and new mothers to protect their own well-being and to nurture their infants.

The previous perinatal study considered care of the maternal-infant dyad only through the neonatal period. Interest in national comparative studies on the care of older infants and children grew out of concern that many children in the U.S. fail to participate in routine preventive health care, and that some measures of U.S. child health showed adverse trends in the 1980s (Miller, Fine, & Adams-Taylor, 1989). If other industrial democracies are doing better than the U.S. in these respects, then review of the circumstances might yield useful lessons for health and social policy in the U.S.

The present study extends the previous perinatal analysis (Miller, 1987) into considerations of health care and social supports for older infants and children through the early school years. The same 10 countries are considered, selected from the 23 that comprise the European Region of the World Health Organization. Policies of nations with monopolistic health care systems—and of the smallest countries—are unlikely to guide possible reforms in the U.S. Therefore, the study countries were selected according to these criteria:

- lower infant mortality rate than the U.S.;
- elements of pluralism in their health care systems according to judgments made by a committee of the World Health Organization (EURO, 1985); and
- population greater than one million.

The new study posed three issues in relation to these countries:

1. What is the status of children's health?
2. What are the standard preventive health services for children? To what extent do children routinely receive these services? What are the provider systems that assure participation?

3. What social supports are routinely linked to children's health care? What are the mechanisms of linkage?

Answers to these questions were sought by means of a lengthy survey (Appendix A) completed by child health experts in each country. These responses were supplemented by data from international agencies such as the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO), and by review of published reports of other investigators in this country and in Europe.

A Preventive Focus

The scope of interest in preventive services and in social supports deserves elaboration. Prevention is sometimes narrowly perceived as clinical services rendered by health care providers: physicians, nurses, nurse practitioners, physician assistants, and other allied health professionals (U.S. Preventive Services Task Force, 1989). Our study attempted to incorporate that perception, but took a far broader view of prevention. The U.S. Office of Technology Assessment's (1988) excellent report on preventive care for healthy children analyzed five categories of prevention:

- prenatal care,
- newborn screening,
- well-child care,
- prevention of childhood injuries, and
- prevention of childhood maltreatment.

That report conservatively linked prevention to favorable health outcomes, and acknowledged that a diverse set of strategies are legitimately regarded as preventive of childhood death and injuries. Examples include government regulations (about areas such as

Our study sought to identify not only clinical services but community endeavors that support children and their families.

smoke detectors, swimming pools, and automobile restraints) as well as home visits to families at risk for child maltreatment.

Other broad social interventions documented by research in related academic fields also link prevention with children's health. Enrollment in enriched early childhood education programs and protection from poverty are known to improve the subsequent social development, health, and well-being of children (Lazar & Darlington, 1982; Starfield, 1982).

For these reasons, this study sought to identify not only clinical services but community endeavors that support children and their families. In Europe, extensive participation in social supports such as paid maternity leaves, birthing bonuses, and children's allowances may be just as important for infant survival as routine perinatal care (Wagner, 1988).

Limitations of this inquiry deserve mention. Many factors influence health; differences among countries in delivery of preventive care doubtlessly account for only a portion of the observed variation in health. In addition, measurement of health is neither simple nor straightforward. Accepted indicators reflect the absence of health; assumptions that they correlate with a positively stated definition of well-being require a leap of faith. Several of the most objective indicators are discussed here. We believe that disparities among nations are of sufficient magnitude and consistency to be real.



A Preventive Emphasis

This work began with the premise that broadly defined preventive health care for children not only improves their health, but it can be provided effectively in a variety of settings in addition to the system of medical care relied upon during illness. Young children can also receive preventive services at home, in child care programs, and in schools.

The Effectiveness of Prevention

Although researchers may not always be able to pinpoint the value of specific components of preventive care, the weight of scientific evidence gathered in North America confirms that prevention benefits children and their parents (Canadian Task Force, 1984; Shadish, 1981; U.S. Office of Technology Assessment, 1988). Among clinical preventive services, at least 169 interventions are considered effective (U.S. Preventive Services Task Force, 1989). Many of these pertain exclusively to children, including screening for perceptual disorders, counseling on the effects of passive smoking, and fluoride supplements.

Some components of preventive medical care are of undisputed value. Routine screening of all newborns for phenylketonuria and congenital hypothyroidism is supported by careful cost analysis (U.S. Office of Technology Assessment, 1988). Multiple studies establish the cost effectiveness of immunization against a variety of diseases (Cochi, Broome, & Hightower, 1985; Hinman & Koplan, 1984; Koplan & Preblud, 1982; Koplan, Schoenbaum, Weinstein, & Fraser, 1979; White, Koplan, & Orenstein, 1985), and the search for new vaccines and toxoids remains a research priority

(Parkman & Hopps, 1988). The majority of well-child visits during the first 2 years of life are planned to meet recommended immunization schedules.

Public health interventions that supplement the medical care delivery system also are effective. Although physician recommendations may not consistently affect safety belt use by patients (Reisinger et al., 1981), state laws are effective (Kahane, 1986). Home visits by trained nurses lower the incidence of preventable injury among children (Olds, Henderson, Chamberlin, & Teitelbaum, 1986), as does well-supervised child care (Marcusson & Oehmisch, 1977; Rivara, DiGuseppi, Thompson, & Calonge, 1988).

A few clinical interventions, such as neonatal screening for thyroid disorders, can be linked to prevention of subsequent specific disease, but many successful interventions of a more complex nature cannot be. For example, the Special Supplemental Food Program for Women, Infants and Children (WIC) is associated with improved birth weight, reduction of prematurity, and reduced rates of hospitalization (Kotelchuck, Schwartz, Anderka, & Finison, 1984; Schramm, 1985). Whether the benefits are a result of improved nourishment, counseling, or comprehensive perinatal care is entirely speculative. Perhaps specific components are especially helpful for different population subgroups.

Remaining Questions About Prevention

Establishing clear and direct linkages between prevention strategies and specific health outcomes is difficult. Concern about effectiveness of prevention is fueled by study of only a few specific interventions. For example, the value of well-child care, especially

Although we may not always be able to pinpoint the value of specific components of preventive care, the weight of scientific evidence confirms that prevention benefits children and their parents.

as it is practiced in medical settings, is subject to debate. Many investigators have demonstrated the low utility of repeated physical examinations in the first 2 years (Anderson, 1972; Gilbert et al., 1984; Hoekelman, 1975), as well as among older children (Kohler, 1977; Yankauer & Lawrence, 1955, 1956; Yankauer, Lawrence, & Ballou, 1957). Parents, however, look favorably upon preventive and well-child visits (U.S. Office of Technology Assessment, 1988). The problem persists when attention moves from specific interventions to broad comprehensive programs. One extensive review noted strikingly inconsistent results among nine studies evaluating the effects of comprehensive care (Shadish, 1981).

Skepticism about the effectiveness of preventive care should be tempered by consideration that measurement tools are crude. The art of health service evaluation may be insufficiently refined to demonstrate subtle but important benefits.

Although prevention is relatively inexpensive compared to the technology needed for cures, many preventive services target the entire population, so their total cost is high. In the U.S., where fiscal concerns increasingly demand that medical care be cost effective, preventive measures are carefully scrutinized (Russell, 1986). Indeed, a more rigorous accountability is exacted for preventive services than for the rapid dissemination of new crisis-directed technologies, even though the latter appear to be driven in part by provider-oriented economic incentives rather than by concern for societal gains alone.

Emphasis on preventive health care is more firmly grounded in ethics than in well-controlled research. Consequently, this study makes no detailed attempt to establish a cause-and-effect relationship between preventive policies and programs and subsequent specific health benefits. Instead, it reports on those health status and risk indicators for which data are readily available and describes health services, social supports, and public policies that are designed to improve the well-being of young children and their families.

Barriers to Preventive Health Care

Lack of participation may explain in part why it is difficult to demonstrate that preventive measures lead to improved health (Shadish, 1981). Financial barriers stop many Americans from obtaining preventive health care (Gemperline, Brockert, & Osborn, 1989; Newacheck & Halfon, 1988). More and more families have no insurance or inadequate coverage. In addition, private insurance typically fails to cover the costs of prevention.

Low-income children are especially subject to ill health and especially vulnerable to its consequences. To the limited extent that broadly defined preventive health care for low-income children has been provided and studied, the results are promising for both short-term (EPSDT) and long-term (Head Start) outcomes (Irwin & Conray-Hughes, 1982; Lazar & Darlington, 1982). The disappointment of these programs is their failure to reach more than a small proportion of eligible children.

Poverty

One consequence of placing a low priority on preventive health care for children is inequity—care is skewed toward the affluent. Ethnic and low-income groups encounter great difficulty in obtaining services. One-fourth of America's children live in poverty; nearly half of all Black children younger than 6 live in poverty-level households. Children from low-income families:

- are less healthy than their more affluent peers, and their relative ill health is compounded by difficulty in obtaining medical care (Starfield & Budetti, 1985).
- are significantly less likely than other children to receive physical examinations, vision testing, immunizations, and dental care (Newacheck & Halfon, 1988).
- experience about the same number of medical visits as other children, but the amount of care is not proportional to the greater need among children from low-income families. Emergency rooms, where counseling, anticipatory guidance, and routine preventive care are unlikely, are often the only available sources of care for low-income families (Kasper, 1987).

Medicaid, the public insurance program for children who live in poverty, finances extensive preventive benefits through the Early Periodic Screening, Diagnosis and Treatment (EPSDT) program, but fewer than one-third of eligible children take part. After

nearly 20 years of EPSDT, only four states screened more than 50% of eligible children, and six states screened fewer than 10% (American Academy of Pediatrics, 1987). The EPSDT guidelines for preventive services are thorough, making all the more regrettable their low levels of implementation.

Medicaid is one of the rare U.S. health insurance programs that pays for preventive services, and children in the program receive more care than those without Medicaid. Income eligibility varies markedly from state to state, however, and seemingly arbitrary exclusions are numerous (Joe, Meltzer, & Yu, 1985). As a result, only about two-fifths of children in poverty are covered by this program (Johns & Adler, 1989).

Children who do receive Medicaid are more likely than privately insured children from low-income families to visit office-based physicians, at least in part because preventive services are covered by Medicaid (Rosenbach, 1989). One study found Medicaid children 64% more likely than children from low-income families without Medicaid to make frequent use of preventive services (Newacheck & Halfon, 1988).

As a result of Congressional action, states are required to increase Medicaid eligibility for increased numbers of children from low-income households. Helpful and desirable as this development is, enlarging Medicaid as it is now structured will leave intact many barriers to preventive care. Access to care remains difficult for low-income families who are eligible for Medicaid; not only is eligibility determination lengthy and exclusionary, but only about half of the nation's physicians accept patients who successfully complete the process. Pediatricians are more likely than other specialists to accept publicly insured patients, yet more than one-third of private pediatricians limit their Medicaid case loads (Perloff, Neckerman, & Kletke, 1986). Prospects that low-income children will receive preventive health care from pediatricians are not improving. Between 1978 and 1989, fewer pediatricians agreed to see Medicaid patients, and more limited the number they would see (Yudkowsky, Cortland, & Flint, 1990).

A review of annual Medicaid expenditures in four states showed that up to 30% of eligible children younger than 5 had not been seen by a physician in the past year, and only about one-third of children eligible for preventive dental care received services (Rymer & Adler, 1987). Because Medicaid children are more likely to receive care than those without insurance, these findings suggest that uninsured children in low-income families are not likely to obtain preventive services.

Related Issues

Other poverty-related impediments to preventive care include limited health care resources in regions with clusters of indigent populations, lack of knowledge about the benefits of prevention, inadequate public transportation, apathy and despair, and the understandable preoccupation of low-income families with pressing priorities of survival.

Cross-national comparisons of health status indicators have revealed worse conditions among U.S. Caucasians than among entire populations of other developed countries:

- Infant mortality rates are greater in the U.S. (U.S. Office of Technology Assessment, 1988).
- Death rates from external causes are higher in the U.S. (Fingerhut & Kleinman, 1989b; NCHS, 1989b).
- Preschool immunization rates are lower in the U.S. (Bytchenko, 1988; Miller, Fine, & Adams-Taylor, 1989).

Thus the relative neglect of low-income and minority populations in the United States does not explain fully why U.S. health indicators lag behind those of European countries generally considered to be more homogeneous than the U.S. Race is an imperfect proxy for socioeconomic status—high poverty levels among U.S. whites may account for much of the national differences.

Variations among countries in health service delivery, content, and preventive emphasis warrant close scrutiny. Lack of consistent emphasis on preventive services in the United States may lead to poor health among all children, not just children from less affluent families.

This study reports on health status and risk indicators and simultaneously describes health services, social supports, and public policies designed to improve the well-being of young children and their families. Other Western democracies, perhaps guided by policies that are motivated more by social values than by research empiricism, have achieved a favorable climate for maternal and child health. We believe the programs which contribute to that climate deserve attention by U.S. policymakers. Policy that defines a favorable social ecology for children incorporates traditional clinical preventive services, but extends to include other social and educational benefits that facilitate health promotion and disease prevention.



The Study Countries

Preventive services are best considered in the context of national health care delivery systems. Each country's system is unique, rooted in the many cultural, historical, and governmental influences that establish national identity (Anderson, 1972). Although the differences among nations are many, Western democracies share several important attributes, including relative affluence, democratic political institutions, and advanced medical technology. These circumstances give rise to similarities in health care delivery and to remarkably similar health status measurements.

Level of Development

Meaningful cross-national comparisons require nations with comparable levels of development. All of the study countries—Belgium, Denmark, France, Germany, Ireland, the Netherlands, Norway, Spain, Switzerland, and England and Wales—are highly developed, and all attach high priority to health care. Even in the least well-off, the general population is still affluent and well educated by global standards. In each country more than 90% of citizens are literate. Measures of basic sanitation, including adequacy of safe water supplies, are exemplary throughout (UNICEF, 1989).

Demographics

Each of the European study countries has more than 3 million inhabitants; France, West Germany, and England and Wales each has more than 50 million (Table B-1). These demographically large countries approach comparability with the U.S., and even the smallest address many of the same policy consider-

ations. Efforts of less populous European nations may interest state policymakers, who assume an increasingly important role in U.S. health policy implementation.

When comparing health care in the 10 study countries and the U.S., analysts are strongly tempted to claim that the greater homogeneity of European nations results in fewer social impediments to service delivery. Racial minorities in the U.S. are indeed larger than any in the European nations, but the importance of this factor may be exaggerated. Rapid improvements in communication and transportation took place as the United States developed, resulting in far greater uniformity of language and custom than exists in Europe, even within the smallest countries. Switzerland's four distinct national languages are spoken within an area about half the size of Maine. Belgium is sharply divided into two distinct sectors by language, cultural traditions, and geography. Inhabitants of major European cities often speak a dialect incomprehensible to residents of the same country who live, by U.S. standards, a short distance away.

The history of most European communities is centuries older than that of the nations in which they are located, and linguistic pluralism is only one consequence. National borders invariably encompass contrasting political and social traditions that developed in relative isolation from one another. Relationships between clearly defined, neighboring groups are often strained, and periodic disagreements frequently lead to conflict. Examples include political struggle between francophone and Flemish-speaking Belgians, calls for a separate Basque state in Spain, and sporadic acts of guerilla warfare in Ireland.

Moreover, substantial minority populations exist in every country, some present since antiquity, as with the Lapps in Norway, but most resulting from a relatively recent influx of foreigners. During the years from 1964 to 1973, immigration produced 37% of French and 90% of West German population growth (Therborn, 1987). Many who became resident aliens were ex-colonials, but the overwhelming majority came in response to recruiting efforts by industry in need of unskilled labor. By 1985 in Switzerland, the foreign-born held 38% of construction and more than 30% of manufacturing jobs, while in West Germany "guest workers" occupied about one-fourth of all jobs in assembly, chemical work, and metal manufacturing (Therborn, 1987). These foreign workers were originally intended to stay only temporarily; they were housed in dormitory-style complexes and were not allowed to bring dependents with them for at least one year (Miller & Martin, 1982). Gradually, temporary settlements assumed an air of permanence, and large cities in most of the study countries developed crowded, low-income, immigrant neighborhoods.

During the 1970s, social policy in Western Europe began to reflect increasing concern for immigrant minorities. Demonstrations protesting squalid housing conditions helped to bring about change, but perhaps more important was the increasing proportion of immigrants who were women and children. In Amsterdam in the early 1980s, the parents of half of all children younger than 5 years of age were born in other countries, most commonly in Surinam or Morocco (Doornbos & Nordbeck, 1985). As Max Frisch observed, Europe "called for labor, but people came" (Miller & Martin, 1982, p. 73). Toward the middle of the 1980s, 10% of French, 16% of West German, and 30% of Swiss live births were children of immigrants. In West Germany, immigrants accounted for more than 6% of elementary school children, and up to 40% of all school entrants in some major cities (Miller & Martin, 1982). Table B-2 shows estimates of minority populations in the European countries.

Changing European labor conditions brought sharp reductions in the service and unskilled manufacturing jobs for which foreign nationals were originally recruited. Although numbers of alien workers increased from 1973 to 1985 in France and the U.K., demand for these laborers declined in most countries; in West Germany the number of employed immigrants fell by 39% during this period, while Belgium and the

Efforts of less populous nations may interest state policymakers.

Netherlands reported a 13 to 15% drop (Therborn, 1987). Unemployment among immigrant populations soared, with the Netherlands reporting figures of 40 to 50% (Penninx, 1989).

Immigrant minorities in Europe seem likely to become a persistent underclass, as few families leave their host countries voluntarily. In Belgium, for example, less than 3% of foreign workers without jobs responded to government incentives to leave, prompting a decision to double the original offer (one year's unemployment compensation plus supplements for spouse and children). Inadequately housed, underemployed, uneducated, and occasionally subjected to discriminatory violence, these immigrant populations must bridge linguistic and cultural barriers far greater than those faced by the U.S. Black population, and by most other U.S. minority groups.

In addition to the difficulties people of dissimilar language and culture may have in obtaining medical care, remarkable geographic barriers exist in some of the study countries. In Norway, rural roads may be impassable for months, and transportation in mountainous cantons of Switzerland can be especially hazardous. In both these countries infant mortality varies by region, from 7.2 to 12.4 deaths per 1000 live births in Norwegian counties, and from 5.8 to 12.5 in Switzerland (EURO, 1988). Disparities in Swiss infant mortality by canton are not explained by maternal risk factors (Martin-Beran, Paccaud, & Ackermann-Lieblich, 1986), although the contribution of topography is not clear. Environmental influence is well acknowledged by Norwegians, who credit their harsh environment for their philosophy of group dependence, an ethic that fosters equity in health care and contrasts starkly with the emphasis on personal self-sufficiency common to other Western European countries and the U.S.

Population growth has slowed in all highly developed countries to an annual increase of 1% or less. During the past several decades, all 10 study countries achieved a rapid decline in infant mortality, a statistic widely used as an indication of overall development and the quality of health services. Mortality among older children also decreased, especially from infectious disease. The chief remaining causes of death and

disability in childhood are similar among all the Western democracies.

Health Care Systems

When the World Health Organization studied prenatal care in its European Region in 1982, it classified health care delivery systems according to the degree of consumer choice. Systems in which patients could choose from a number of independent sources of care, as Americans are accustomed to doing, were labelled pluralistic. Among the study countries, WHO judged only the health care systems of Belgium, West Germany, and Switzerland to be entirely in this category. Systems in the remaining seven study countries contained pluralistic elements, but also included substantial public systems of care. Although the free market influences health care delivery in the U.S. to a far greater extent than in Europe (Iglehart, 1989), the commitment to pluralism is an important feature shared by all countries considered here.

In the interval since perinatal care was studied (Miller, 1987), several of the 23 countries changed the structure of their health care delivery systems. In Norway, health policy moved toward a more monopolistic system much like Finland and Sweden; private practice declined as public clinics grew in importance. Spain, too, strengthened health care under its national social security system. The Netherlands moved in the opposite direction, with proposed cutbacks in mandated services accompanied by a call for increased reliance on private care (Dukes & Haaijer-Ruskamp, 1987). The United Kingdom, arguably providing less freedom of choice than other nations in the study, authorized establishment of an internal competitive market with a reduction of government controls.

Selected aspects of health care delivery and financing in the study countries, with emphasis on ambulatory services, are presented in Table 1. In all 10 nations, most medical care is rendered by independent, private physicians, working either under government contract or regulation. In Denmark, Ireland, the Netherlands, and England and Wales, patients register with a single general practitioner (GP) and generally must consult with this physician before seeking other care. Patients in most other countries may consult specialists directly. Danish patients may do so if they choose out-of-pocket co-payment, but 93% prefer to let their chosen GP function as gatekeeper. European hospitals are usually staffed by salaried physicians with little or no

In all the study nations, most medical care is rendered by independent, private physicians, working either under government contract or regulation.

involvement in ambulatory care except for consultation, and GPs do not generally care for patients when they are admitted to hospitals. Even in those European study countries where nearly all physicians are employed by the state, fee-for-service payment of private physicians is the rule.

Most commonly, public or private insurance reimburses fees directly to medical providers. In all European countries surveyed, such insurance is either entirely or in part government-subsidized, and virtually all citizens are insured in some fashion. When private or quasi-governmental insurance or "sickness funds" are involved, as in Belgium, France, the Netherlands, Switzerland, and West Germany, they are subject to strict government regulation; coverage is generally compulsory for all wage earners and their families, with costs offset by employee and employer. Some funds cover only specific occupational groups—a tradition originating with medieval guilds—and benefits may vary within government-prescribed limits.

Health and Support System Costs

The U.S. devotes a larger share of GNP to health care than any other country in the study (Table B-3), yet infant mortality is higher in the U.S. Differences among nations in price and purchasing power may account for part of this discrepancy (Parkin, McGuire, & Yule, 1989), but Americans have good reason to question how their health care dollar is spent. Available information does not reveal how much of total outlay goes to fund preventive and primary care services in different countries; some nations may spend proportionately larger amounts on preventive care for women and children. More importantly, subsidized care for those of limited means is less available in the U.S.; each of the study countries report higher percentages of GNP allocated to public sector care.

Public expenditures in support of ambulatory care, which includes most preventive services, average about 20% in Europe (Culyer, 1988). A comparable reliable figure, considering all public sources at all levels of government, is not available for the U.S., but estimates

TABLE 1
Delivery and Financing of Medical Care

Country	Provider Type	Finance	Provider Payment
Belgium	Pediatricians and GPs. Patients have free choice among providers, specialists as well as generalists.	Compulsory, near full participation health insurance requires variable co-payment according to employment status and risk category. Funds largely derived from employment; government funds cover indigent care.	Private providers paid fee for service (FFS).
Denmark	Patients register with GP of choice and may change physicians only once yearly. Option to have free choice among specialists and GPs costs more and is selected by 7%.	Country-wide health insurance financed through general taxation.	Private providers are on government salary; in most areas, about half of GP's salary is based on number of patients registered and the remainder is based on volume of services rendered.
France	Pediatricians and GPs. Patients may consult specialists directly.	Employment-based, compulsory insurance covers almost everyone, about 80% belonging to the largest fund (<i>Régime Général</i>). Government provides coverage for unemployed and destitute, but some chronic unemployed are uninsured.	Most hospital-based physicians are salaried, and most private outpatient treatment is FFS; about one-third of all physicians derive income from a mixture of the two.
Germany (FRG)	Pediatricians and GPs. Patients may consult specialists directly.	Employment-based social insurance is compulsory below a certain income; > 90% of the population is covered. A small minority, mostly affluent, purchase private insurance.	Private physicians are paid FFS; fees negotiated with physician finance unions, consortia representing large groups of sickness funds.
Ireland	Mostly Area Medical Officers who are GPs. Specialized care consultation.	Government-financed, country-wide insurance covers all services to about 40% of the population; co-payment required of others.	Private physicians paid FFS.
Netherlands	Pediatricians and GPs. Specialist care by consultation.	Health insurance is compulsory below a certain income, financed through employment and tax revenue. About 70% are insured through employment-based sickness funds, and the remaining 30% have private insurance.	Private physicians paid FFS or by capitation (a set annual fee per patient registered).
Norway	Health visitors and public health physicians; social workers often attached to school health service.	Direct government financing out of general tax revenue.	Providers on government salary. A small amount of FFS private practice exists.
Spain	Pediatricians and GPs. Free choice of public and private providers, but most care delivered in health centers.	98% of population is covered by national health insurance, funded through social security.	Most providers are on government salary, although some private FFS persists.
Switzerland	Pediatricians and GPs. Patients have free choice of provider.	Employment-based insurance covers > 95% of population.	Private physicians paid FFS.
United Kingdom	Virtually everyone registers with a GP or health center; patients may not consult specialists directly.	National health insurance covers all, financed from general tax revenue.	Private physicians compensated according to combination of capitation, allowances, and FFS.
United States	Pediatricians, GPs, and family practitioners, sometimes assisted by nurse practitioners or physician assistants. Patients have free choice of provider.	Public and private health insurance covers most children, but coverage is neither compulsory nor available to all. Publicly-insured children have limited access to care.	Private physicians largely paid FFS. In groups and prepaid plans, some combination of salary and productivity incentive is common. Public sector providers are on government salary.

Sources: Survey responses; Raffel, 1984; WHO, 1989.

Differences in economic support for families may account for greater variation in children's health status than differences in health care use.

fall substantially below the European figure. In 1975, for example, Robbins estimated the total cost of prevention programs in the United States at less than 4% of all health service costs (Robbins, 1975). In the intervening years, major increases in expenditures can be explained by the rising cost of hospital care rather than an increased commitment to community-based prevention.

This report does not address the subject of hospital-based care, but in all countries inpatient and long-term care account for the overwhelming majority of health care expenditures. Major European efforts to reduce costs have targeted these services, some by rationing non-emergency services such as elective surgery. Even the most aggressive blueprint for fiscal restraint, issued by the Dekker commission in the Netherlands, recommended continued government

funding of preventive services (Dukes & Haaijer-Ruskamp, 1987). In all countries, efforts to reduce hospital care are accompanied by expansion of resources for community and home care.

Sentiment in the U.S. appears to be quite different, as greater attention is drawn to heroic measures to save individual lives rather than to preventive care for all. Efforts to curtail use of public funds for organ transplantation, for example, led in one state to vigorous public opposition and several lawsuits. Because no patients are in immediate danger of death for lack of preventive care, the portion of the U.S. health care budget earmarked for prevention is a likely target for fiscal restraint; the cutbacks of 1981, for example, included a disproportionate reduction in funding for maternal and child health.

Social spending also impacts substantially on health status. Programs that directly support families are more generous in Europe than in the U.S. (USDHHS, 1989); one result is lower poverty rates among children (Smeeding & Torrey, 1988). Differences in economic support for families at all income levels may account for greater variation in children's health status than differences in health care use.



Data Collection Methods and Sources

The European democracies under study all possess elements of pluralism in health care delivery and have populations of sufficient size to permit meaningful comparison at least to individual U.S. states. All 10 countries have lower infant mortality rates than the U.S. This inquiry first examined data relevant to children's health status with the expectation that other measures would parallel infant mortality rates. To identify factors that may contribute to the gap between the health of U.S. children and their European peers, we then sought comprehensive information about each country's child health services.

First, we requested background articles and statistics from each of the study countries. A number of these sources proved invaluable. World Health Organization statistics are routinely adjusted to compensate for differences in definitions and reporting, making them an accurate and convenient source to verify and supplement other data. Information on health indicators in the European region (the Health For All Program) and cause-specific mortality figures were particularly helpful. Comparable information about the United States was readily obtained from National Center for Health Statistics publications and from other reports in the medical and public health literature.

The survey instrument for this study (Appendix A) was designed to collect a range of information, with particular emphasis on the organization of preventive services, participation rates among ethnic minorities and low-income families, and mechanisms to ensure access to care. Issues covered in some detail included screening, well-child care, child care policy, immunization, and injury control. A few questions concerned

child nutrition, dental prophylaxis, and the prevalence of abuse and neglect. The questionnaire was examined in preliminary form by three European reviewers and one official of the U.S. Bureau of Maternal and Child Health. Many of their criticisms and suggestions for revision were incorporated into the final version.

Experts in each of the European countries completed the survey about preventive health care for children. Respondents were located by corresponding with official departments of health statistics in each country, and by contacting individuals helpful in the study of perinatal care (Miller, 1987). A total of 12 people completed our survey: 4 regional public health officials, 3 national public health officials, 3 academicians in public health or social medicine, 1 professor of pediatrics, and 1 national health statistics officer. In Switzerland, three individuals completed the survey, with help from several others.

The replies, ranging from brief to exhaustive, constitute the primary source of data for this report. The number of questions posed and the detail required to answer them fully resulted in some incomplete responses. Additional questioning clarified some hazy issues, but time limits and information available did not enable us to eliminate all unevenness in the responses. When necessary, information gaps were filled by consulting other sources. Further guidance was sought from academic leaders in public health, and by pursuing suggestions of the European Regional Office of the World Health Organization (EURO). The same people were often recommended by different sources, lending a measure of validity to the process for identifying appropriate survey respondents.

Expert opinion should not be equated with

established fact, and our survey responses undoubtedly contain both. We encouraged respondents to provide estimates and personal viewpoints on conditions when data were not available. Moreover, variation within some countries made overall generalizations difficult. As in the United States, most countries allow regional and municipal governments to modify programs according to local resources and need. Standards for preventive and ambulatory services are often formulated at the national level but implemented differently by various community and regional authorities. Thus, several respondents were vague when describing the organization of services.

In spite of these concerns, we found remarkable consistency among sources. The three Swiss question-

We found remarkable consistency among sources.

naires were in remarkable agreement, with inconsistencies explained by acknowledgement that regional data were used. Published reports often provided important supplemental data but seldom conflicted with survey results. Review of survey responses confirmed our expectations that systematic attempts in each country have created a variety of mechanisms to safeguard the health of children from birth through adolescence.



Major Findings

Children's Health Status

Information was available from all the study countries on several important indicators of child health: death rates from disease and injury, morbidity from infectious disease, and immunization rates. Several also could provide data on the incidence of abuse and neglect, but national data on other accepted indicators were unobtainable.

Child Survival

Infants. The attention of policy analysts has focused for decades on comparisons of infant mortality between the U.S. and Western Europe, comparisons that reveal a persistent worsening disadvantage for U.S. infants, even among comparable racial and socioeconomic groups. The inferior U.S. record is generally attributable to high rates of low birth weight, but the proportion of infant deaths occurring in the post-neonatal period is rising, and more than 80% of these deaths are among infants of normal weight at birth (Starfield, 1985).

Sudden infant death syndrome (SIDS)—unexpected and unexplained death in a child younger than one year of age—is the leading cause of post neonatal death in the U.S. Reported frequency of SIDS is substantially higher in the U.S. than in Europe (Wennergren et al., 1987). Part of the difference may be explained by imprecise diagnosis, but other contributory causes are evident: risk factors for SIDS include low socioeconomic status (SES), teenage pregnancy, inadequate prenatal care, and low birth weight (Starfield, 1985), all more prevalent in the U.S. than in Western Europe (Miller, 1987).

A comparison of injury death rates among infants (Table B-4) reveals that the most populous European countries have the highest overall rates, especially France and West Germany, but Belgium also reports higher injury mortality than the U.S. for this age group. In France, and perhaps elsewhere, many of these infant injury deaths are actually due to SIDS (Manciaux & Tursz, 1990).

Young Children. New attention focuses on children's survival rates beyond their first year. The mortality rate of U.S. children is higher than for their Western European counterparts in all age groups through 19—higher by a factor of 1.3 to 2.0 for children 1 to 4 years of age (NCHS, 1989b). As with infant mortality, survival rates for children are improving in all industrialized nations, but progress has been more rapid in Europe than in the U.S.

Children in the U.S. are far more likely than their European peers to die from injury. The leading natural causes of death in childhood—congenital defects, malignancies, and respiratory infections—occur at about the same rates among all the leading industrial nations, but U.S. children are far more likely than their European peers to die from injury. After infancy, excess injury deaths in the U.S. relative to other developed nations occur predominantly in the youngest and oldest age groups—among children 1 to 4 and 15 to 19 years of age. Death rates among U.S. children from unintentional injuries, primarily those caused by automobiles, fires, and drowning, exceed those in Western Europe by a substantial margin (NCHS, 1989b).

U.S. infants are at a persistent worsening disadvantage.

The difference between U.S. and European mortality from intentional injury to children is still greater. Homicide as a cause of children's death in the Western world is almost uniquely a U.S. phenomenon (Rockett & Smith, 1989). The proportion of injury deaths in the U.S. caused by homicide rose steadily during the 1980s, and in recent years homicide has become the leading cause of death from injury in the first year of life (Waller, Baker, & Szocka, 1989). In the 1- to 4-year-old age group (Table B-5), overall U.S. injury mortality ranges from 35 to 250% greater than in the European study countries. U.S. mortality rates from the four leading causes of fatal injury are highest or second highest in every category among males; U.S. rates among females never fall below third highest.

Lack of adult vigilance and supervision accounts for many 1- to 4-year-old children's deaths. In analysis of fatal house fires in North Carolina during 1988, 65% of child burn fatalities were associated with a caregiver who was absent, inattentive, inebriated, or bed-ridden. A child younger than 5 was seven times more likely to die in a fire under these circumstances than a child in a fire where a non-compromised adult was present (Gugelmann, 1989).

Automobiles are another common cause of death for children in the U.S. Child pedestrians and cyclists—often playing in driveways and parking lots—account for more than half of automobile-related U.S. deaths among 1- to 4-year-olds (NCHS, 1989b). Pedestrian death rates are highest among 1-year-old children (Baker & Waller, 1989).

Child passengers are especially vulnerable in alcohol-related crashes. During a 3-year period in North Carolina, more than half of all deaths in motor vehicle accidents occurred among children riding in cars with alcohol-compromised drivers (Margolis, Kotch, & Lacey, 1986).

Injury death rates for all age groups by cause and gender are shown in Table B-5, with U.S. rates shown by race. Race-specific rates are cited to emphasize that injury death rates for the U.S. white population are still well above European figures, minorities included. Higher injury mortality among U.S. racial minorities is undoubtedly due largely, if not entirely, to SES (Gulaid, Onwuachi-Saunders, Sacks, & Roberts, 1988).

Injury death rates for school-age children are comparatively low in all nations, so these age groups do not contribute substantially to the higher U.S. injury mortality. Nevertheless, fatal traffic accidents, fire-related injuries, drowning, and homicide in the 5- to 14-year-old age group are generally higher in the U.S. than the European countries studied (Table B-5).

Preschool children in the U.S. are far more likely to die from injury than children in the study countries. Reasons for this must be clarified so that appropriate measures can be identified and implemented. Several factors appear likely to contribute, and these deserve close attention:

- Good quality child care is less available in the U.S. than in Europe, even though single parents or both parents are more likely to be employed outside the home.
- U.S. rates of teenage parenthood are unequalled (Jones et al., 1985), yet these young parents generally lack the skills, maturity, and resources to rear their children optimally.
- Families with young children who live in the U.S. have alarmingly high poverty rates (Smeeding & Torrey, 1988).
- Participation in well-child care appears to be lower in the U.S. than in Europe.

More data relevant to these issues is presented in the section of this book on the organization and delivery of care.

Adolescents. Differences in child survival rates between the study countries and the U.S. are most remarkable for older teenagers (Table B-5); teens in the U.S. are 31 to 66% more likely to die. This older group, which includes many individuals properly regarded as young adults, is the only age group in the U.S. for whom deaths have increased rather than diminished since 1970 (Fingerhut & Kleinman, 1989b).

Homicides and motor vehicle fatalities are the two leading causes of teenage deaths. Murder, largely by firearms, has increased by 31% since 1986 (Fingerhut & Kleinman, 1989a). More than 1,000 firearm-related homicides among U.S. males aged 15 to 19 years were reported in 1986. In the same year there were 25 such deaths in Canada, England and Wales, France, Japan, Sweden, and West Germany—all together (Fingerhut & Kleinman, 1989a). Although homicide is more common among Blacks, the rate for white teens remains much higher than in European countries.

Homicide as a cause of children's death is almost uniquely a U.S. phenomenon.

Morbidity Patterns

Substantial differences in morbidity among preadolescent children in highly developed nations have not been documented, in part because there is no standard indicator that serves older children in the same fashion as low birth weight for infants. We sought information on rates on nonfatal injuries, developmental problems, infectious diseases, abuse and neglect, and lead poisoning. Our findings, though limited by inconsistent definitions and sporadic reporting in the study countries, suggest that the burden of morbidity among young children is greater in the U.S.

Injury. Fatal injuries are reported in all Western countries, and the statistics are of high quality, but these figures represent a small part of the total injury problem. Nonfatal injuries are far more common and produce enormous pain, disability, and expense. Advances in treatment increase the likelihood that severely injured children will survive, perhaps facing lifelong disability instead of death; declining mortality may not mean that injuries are becoming less common. Unfortunately, there is no standard international measure of injury severity. In addition, most nonfatal injuries are not reported, or even treated medically. Available data do not permit valid international comparison (Tursz, 1986), and death remains the best comparative index.

Early Diagnosis. Our survey requested data on growth curves, anemias, perceptual disorders, developmental delays, and handicapping conditions—hoping to document differences, if not in the rates, then in the ages of first diagnosis of these conditions. Respondents conscientiously described services and their availability, but data necessary to compare the effectiveness of services were generally lacking.

Nevertheless, variations in detection of levels of children's health apparently exist. One such difference is revealed in former Surgeon General Koop's letter to U.S. physicians alerting them to diagnose deafness early (Koop, 1989). His letter asserted that the average age at which hearing impairment is identified in U.S. children was 2½ years, compared with 7 to 9 months in Israel and the U.K. That U.S. lag in identification is plausible, given the national patterns of well-child

care, but the only bases we could find for comparison were special demonstration projects.

Infectious Disease. Young children in Western Europe are more completely immunized at earlier ages than in the U.S., so data were carefully reviewed on the rates of vaccine-preventable diseases (Table B-6). Only figures for measles and pertussis (whooping cough) are shown; these are among the most common diseases against which children are immunized, and the overwhelming majority of deaths that result from the two diseases occur among children. In contrast, polio, tetanus, and diphtheria are now quite rare and may not always be reported (Grenfell & Anderson, 1989), resulting in unstable incidence rates. Death from polio and tetanus, although still a concern for adults, is extremely unlikely in the early years (NCHS, 1985-1988; WHO, 1989). Mumps appears to be more common than measles in the Netherlands, Norway, and Spain, but comparison data are not available from any of the other study countries (Bytchenko, 1988).

The number of deaths from whooping cough and measles fluctuated annually in all study countries, and there seems to be no clear-cut pattern of national advantage. Variations among countries may depend more on reporting mechanisms than on actual incidence. A high degree of under-reporting is typical in the U.S. even during epidemics (Weiss, Strassburg, & Fannin, 1988), and in Europe the estimated proportion of notifiable disease that goes unreported may be as high as 95% (Bytchenko, 1988). Statistics that so poorly reflect the incidence of disease are ill-suited to comparison and should not be expected to correlate well with immunization rates.

Abuse and Neglect. Abuse and neglect of children are well-documented problems that increased in the U.S. during the 1980s at a rate beyond what can be attributed to heightened public attention and reporting (Select Committee, 1987). All of the study countries also contend with abuse and neglect, but prevalence is considered to be much lower than in the U.S.

Differences in definitions and reporting make it impossible to draw exact comparisons, but U.S. rates of child abuse and neglect greatly exceed those of the study countries. In recent years the annual number of cases reported has been about 1,000 in Ireland; 1,500 in Belgium; and some 50,000 in France; in contrast, more than 2,000,000 reports of abuse and neglect are filed annually in the U.S., representing about 3.4% of all American children. Informed estimates range from only .05% in Norway (1979 survey data) to 4%

More than 1,000 firearm-related homicides among U.S. teenage males were reported in 1986. In the same year there were 25 such deaths in Canada, England and Wales, France, Japan, Sweden, and West Germany—all together.

in France, which is slightly higher than the rate of cases actually reported in the U.S.

Other, less direct evidence also indicates that U.S. rates of child abuse and neglect are generally higher than in the study countries; homicide rates and other measures of social dysfunction suggest that we are a more violent society than Western Europe. There is every reason to believe that this societal violence impacts disproportionately on children. No valid national estimates of child abuse and neglect are available for Denmark, the Netherlands, Spain, Switzerland, or England and Wales. Respondents from all these countries acknowledged the existence of a problem and expressed concern despite its presumed low prevalence.

Efforts to intervene early on behalf of children at high risk for abuse or neglect were common in countries with established reporting systems and in those with none. Comprehensive child protection legislation was recently enacted in Belgium. Every country surveyed (except for Spain and West Germany, for which no data are available) provides home visits to families at high risk for violence or serious parental dysfunction. Routine visits to nearly all homes identify such families early, and several countries feature immediate involvement of social workers when conditions warrant. Increased surveillance by health visitors combined with early intervention may partially account for lower levels of child abuse in Europe.

Lead Poisoning. Lead poisoning is a well-documented problem among U.S. children (Miller, 1987). Potentially dangerous levels of lead are known to affect as many as 20% of poverty-level preschool children. Cognition, behavior, and temperament can be adversely affected (Bellinger, Leviton, Waternaux, Needleman, & Rabinowitz, 1987). Sources of lead are not completely understood, but paints, automobile exhaust, and defective plumbing have been heavily implicated.

These sources also represent a threat to European children, and the problem is studied and acted on at community levels, but national data were not available. International comparative data have not been published, and respondents to our survey provided none.

Organization and Delivery of Care

Infant and Well-Child Medical Care

Differences in prenatal care between the U.S. and the 10 study countries have been discussed elsewhere (Miller, 1987). Here we are concerned with the content and provision of preventive care to infants and children after delivery. In all countries except the Netherlands, where home deliveries are encouraged, this process begins in hospitals. Specialized hospital personnel and technology are unnecessary for most births, but medicalization of childbearing has likely led to increasingly uniform standards of care. Accordingly, although practices may vary somewhat from hospital to hospital, respondents indicated that similar procedures prevail in each country.

Hospital Care of the Newborn. Laboratory tests routinely performed on newborns before leaving the hospital are shown in Table B-7. Screening for inborn errors of metabolism is standard; virtually all newborns are tested for phenylketonuria (PKU) and congenital hypothyroidism. Respondents were not queried about the extent and quality of monitoring, but where coverage was reported it exceeded 98%. Coverage in the United Kingdom, Ireland, and the U.S. (eight states) has been previously documented at 90, 94, and 99% respectively (Starfield & Holtzman, 1975).

The same report observed that better organized follow-up of abnormal test results resulted in earlier treatment outside the U.S., especially in the U.K. Some countries also routinely screen newborns for homocystinuria and galactosemia. Declining emphasis on testing for syphilis is evident, although France and Norway reported that all pregnant women are screened.

Established practice in Europe and the United States includes neonatal prophylaxis against certain conditions. Administration of antibiotic eye drops, for example, can prevent ophthalmic infection in babies born to women with gonorrhea or chlamydial cervicitis. Once widely practiced, this measure continues in only a few of the study countries, despite increasing rates of chlamydial disease. Administration of vitamin K,

which also lost favor during the 1970s, has again become routine. Evidence suggests that vitamin K can prevent almost all hemorrhagic disease of the newborn (HDN), a bleeding diathesis which may afflict infants in the first weeks of life (Dam, Dyggve, Larsen, & Plum, 1980).

Breastfed infants are more likely than others to contract HDN, presumably because their initial low nutrient intake includes little vitamin K. As breastfeeding became more popular in recent years, incidence of hemorrhagic disease also increased (McNinch, L'Orme, & Tripp, 1983). So-called late hemorrhagic disease of the newborn, a less common but often more devastating disorder that occurs in later weeks, almost exclusively occurs among breastfed infants. Evidence from France and West Germany suggests that intramuscular vitamin K is more effective in protecting against late hemorrhagic disease, but the oral route is preferred in other countries with low incidence rates (von Kries & Göbel, 1988). All but Ireland and Spain routinely administer vitamin K.

Finally, newborns are subjected to several physical examinations during the first days of life. All respondents reported an exam soon after delivery—immediately following delivery in at least four of the study countries—and again at or around the day of discharge from hospital. The latter examination is almost invariably performed by a physician, specifically a pediatrician in five countries, although midwives are commonly involved in Ireland and for home deliveries in the Netherlands. Initial examinations are more likely than discharge physicals to be performed by obstetricians and midwives, especially in France, Ireland, and the Netherlands; pediatricians are mentioned most often in other countries.

In only three countries are other than two examinations considered routine: babies in Spain are examined daily; Irish infants are examined twice by a midwife, once by a pediatrician; and Dutch babies born at home (about 35%) generally receive a single exam by the responsible doctor or midwife, followed up 6 to 9 days thereafter by a visiting nurse.

Respondents were asked about content of the standard physical exam and shared their impressions, but none cited studies of actual practice. Most often mentioned were auscultation of heart and lungs, examination of sensory organs, and testing for congenital hip dislocation. In five countries routine physicals are usually performed at bedside in sight of the mother, while in others this practice varies among hospitals.

Well-Child Care. The recommended schedule of visits for preventive care varies considerably (Table B-8), but the mechanisms by which care is delivered show striking similarities. The study countries rely on four sources of preventive care:

- private physicians
- home visiting programs
- child health centers
- school health programs

In contrast to the United States, the majority of European countries consider the physician's office to be the least common site for preventive care. Respondents from 8 of the 10 countries indicated that most preventive care is delivered outside physicians' offices. Care for children generally begins at home with visits by a public health nurse or other health visitor, continues in publicly financed health centers, and is then transferred to a school health system. Organization of services is summarized in Table 2. Each of the three alternatives to private, physician-based care will be examined separately.

Private Physicians. In Denmark, West Germany, Switzerland, and to a lesser extent France, private physicians play a central role in preventive care, but other sources of care are also important. In Denmark an intensive program of home visits supplements the efforts of the family doctor. The majority of French families elect to share the expense of private preventive care (insurance covers 70%), but maternal and child health centers provide free services to all children. German and Swiss physicians in private practice have more responsibility for preventive care because there are few public child health clinics in either country.

As in the United States, physician groups in these countries promulgate extensive recommendations for preventive care, but the efforts of the private sector are not easily monitored, and little descriptive data exist. In West Germany, public health centers complement private sector efforts, especially in urban settings, but such clinics are understaffed and have limited resources. Public clinics in the U.S. often face similar constraints. Public clinics in the European study countries are supported by government funds, with the occasional assistance of charitable organizations such as the Red Cross.

All of the study countries in which private physicians provide most preventive care ensure that financial barriers do not limit participation. Although all West Germans and the Swiss are covered by some form of health insurance, at least 12.9% of American children

TABLE 2
Organization of Preventive Health Services

<i>Country</i>	<i>Home Visits</i>	<i>Preschool Care</i>	<i>School Health Service</i>	<i>Finance</i>
Belgium	All women visited by district nurses, affiliated with public clinics.	Maternal and Child Health and infant clinics available to all, managed by <i>l'Office de la Naissance et de l'Enfance</i> (ONE) and <i>Kind en Gezin</i> (KG). Private physicians provide about 50% of preventive care.	Largely health-center based, also delivers health education in schools. Care begins in preschools at age 3, primary school ages 6-12.	ONE/KG is government financed and funds all public clinics. Clinic providers are salaried by ONE/KG. Private care entails co-payment.
Denmark	All women visited by public health nurses; 7-9 visits in first year, then by agreement with parents. High-risk children followed until they begin school.	Public well-child clinics in cities. Private physicians provide <90% of preventive care.	Begins with a compulsory exam during first year of school, at age 6 or 7. No curative services rendered; children with problems are referred to private physician.	Public clinics are funded out of general tax revenue, primarily at the municipal or community level, with providers on salary. No co-payment for private care.
France	Local option; no uniform practice.	Public maternal and child clinics, and a few other agency-backed public clinics (Red Cross, etc.), provide 1/3 of preventive care. Most preventive services rendered by private physicians.	Care begins in creches and kindergartens at age 2½; almost all children attend at age 4, although school is not compulsory until age 6. Many schools have full-time clinics for older children.	MCH Centers are state funded and providers are on government salary. Private care entails co-payment.
Germany (FRG)	Local option; no uniform practice.	Few public health clinics exist. Private physicians deliver most preventive care.	Care begins at age 4 for 80% of children. Content of care varies by region.	Health clinics are state funded, and public providers on government salary. No co-payment for most private care.
Ireland	All women visited post-partum by public health nurses; visits continue on periodic basis.	Preschool clinics, staffed by community health doctors and public health nurses, provide most preventive services. Private GPs deliver some preventive care (<10%).	Begins with compulsory exam, usually at end of first year of school (children begin at age 4 or 5). Public health nurse visits yearly for screening, and Area Medical Officer carries out examinations in schools.	Clinics are financed through general taxation, and providers are on government salary.
Netherlands	All women are visited post-partum by district nurse.	Public baby clinics register >90% of children; preschool clinics register about 70%. Private physicians provide little preventive care, only in rural areas.	Begins at age 4 for overwhelming majority; 96% attend kindergarten at this age. All school children receive care, about half in schools and half in health centers located outside schools.	Public clinics are operated by Cross Societies, funded primarily through social security and local contributions. School health is financed by municipalities. Clinic nurses are salaried by Cross Societies; physicians are paid either salary or FFS (variable).

Continued on next page

TABLE 2 *continued*
Organization of Preventive Health Services

<i>Country</i>	<i>Home Visits</i>	<i>Preschool Care</i>	<i>School Health Service</i>	<i>Finance</i>
Norway	70-80% of women visited postpartum; others called.	Child health centers render all preventive care.	Compulsory exam at school entry (age 7). Often visits by same providers who manage child health center; sometimes another part-time public health physician. No schoolbased clinics.	Clinics are funded by municipal councils out of general tax revenue and providers are on municipal government salary.
Spain	Data not available.	Primary health centers render 80-90% of preventive care, also provide array of other services at all ages. Private physicians and hospital outpatient departments provide some preventive care; varies with location.	Begins at age 6, varies with location. No uniform national policy.	Public clinics are government funded, and providers are on government salary.
Switzerland	Most women visited by community health nurses postpartum, but proportion declining. Varies by canton.	Private pediatricians and GPs provide overwhelming majority of care.	In most cantons care begins at age 5-6 in kindergarten. Private physicians under part-time contract provide services, in some regions assisted by school nurses. Full-time clinics only in large cities, located outside schools.	School health services and visiting nurses are funded by government; physician services covered through insurance "unofficially." Parents responsible for co-payment. Public providers are on government salary; school physicians are sometimes paid FFS (variable).
United Kingdom	All women visited within 2 weeks postpartum by community midwife, then later by health visitor (community nurse). Frequency of visits negotiated individually.	Overwhelming majority of care rendered by community doctor (clinical medical officer or CMO) and community nurse. Private GPs provide some care.	Most care begins with primary school at age 5. Emphasis on screening by school nurses, examinations by physicians less common. No clinics in schools.	Health centers are funded directly by government, and providers are on government salary.
United States	No uniform policy. Regional programs are rare and decreasing in scope.	No single system prevails. Both private and public sector providers deliver preventive care; about half of all immunizations are given in each sector.	Begins at age 5 with requirement that immunization status be documented. No national policy exists. School-based clinics are rare.	Private care requires cash payment; insurance seldom covers preventive care. Public clinics and school services are financed by federal and state government.

Sources: Survey responses; Raffel, 1984; WHO, 1989.

Most preventive care in 8 of the 10 European countries is delivered outside physicians' offices.

are uninsured (Moyer, 1989). The difference in need for public sector care between these countries is enormous. Swiss insurers follow the U.S. system of excluding well-child care from coverage, but established practice is for care to be reimbursed; typically the physician attributes the visit to one acute diagnostic code or another. In Denmark, the expense of well-child care is entirely government financed, and the French and Swiss are responsible only for partial payment.

Home Visiting. The value of home visiting has been demonstrated in the U.S. (GAO, 1990; Olds et al., 1986), but practice of this important source of preventive care and parent education is far more prevalent in Europe. In Belgium, Denmark, Ireland, the Netherlands, and England and Wales, virtually all women are visited at home during the early postpartum period, and systematic efforts to reach all women are made in Norway and Switzerland.

Norway's program is limited by inadequate numbers of qualified visitors, but all new mothers are contacted by telephone when a visit is not possible. A trend in Switzerland toward refusing home visits is the result of changing parental preference, although pediatricians' concerns about the alleged quality of home advice may also contribute. Many programs allow for multiple visits, and Denmark's is particularly noteworthy: Danish mothers are visited on average seven to nine times during their child's first year, and visits continue for families at high risk because of medical or social factors.

The benefits of home visitation are several. Health visitors are usually nurses with special training that qualifies them to deliver advice on anticipated problems, give informed encouragement to breastfeed, and respond to specific questions. More importantly, in the home setting health visitors can better assess environmental risks, both physical and social. Finally, the routine deployment of health visitors gives public clinics an especially potent reminder scheme; in seven of the countries surveyed visitors call on the homes of children who fall seriously behind the recommended immunization schedule, or who fail to keep appointments.

The schedule of home visits varies, both within countries and across the study sample. The typical arrangement is for all women to be visited at least once during the first month postpartum; visits then continue for as long as resources allow and the needs of individual families dictate. This may be until the child begins school, but in the absence of unusual health risks only a few visits are routine in most countries, generally in the first few months.

Respondents from several countries reported concerns that families at high risk might be more reluctant than others to allow visits, but very little objective information exists about families who refuse this service. Statistics from countries that monitor acceptance rates demonstrate the popularity of health visitors; the proportion of newborns visited ranges from 70% in Switzerland to virtually 100% in four countries. In the U.K. visits are required by a midwife within 14 days of discharge and then by the district health visitor.

In addition to playing a central role in health education and risk assessment, health visitors in several countries provide specialized services. Physical exams are performed at home by health visitors in at least two countries, and in at least two others they have primary responsibility for assessing child development. Danish health visitors conduct standardized screening for developmental delay (the Boel test) in homes at 7 months, and in most of the country they perform more extensive testing at age 2½. In Ireland, public health nurses complete standard checklists of developmental indicators for several years. Other duties of health visitors include laboratory testing, as with PKU testing in the United Kingdom, and for babies born at home in the Netherlands. Immunizations are given at home in Ireland and the U.K.

Child Health Centers. Public clinics are the primary focus of preventive care for young children in most of Europe. In the study countries such clinics typically have limited capacity to render curative care, presumably to avoid needless duplication of physician-based services. Norway's child health centers, for example, are headed by health visitors who are registered nurses with additional training. A full-time salaried physician is overseer, but he or she generally provides curative services at a separate office. In Ireland and the U.K., Medical Officers under government contract manage health centers that feature a team approach, often including visiting nurses, social workers, and other professionals. Although curative

Home visiting is an important source of preventive care and parent education in Europe.

services may be rendered alongside preventive care when necessary, the latter is emphasized; a separate network of private GPs cares for the majority of the sick.

Public baby and preschool clinics in the Netherlands are the only source of preventive care outside the home, as the country's private physicians are not reimbursed for preventive services. Primary care physicians in Belgium render a substantial amount of preventive care, but the Belgian National Foundation for Child Welfare—Office de la Naissance et de l'Enfance (ONE)/Kind en Gezin (KG)—operates several types of preventive health centers: child clinics for children younger than 3, infant welfare clinics for immunizations, and clinics offering more comprehensive care of children aged 3 to 6.

In Spain, an expanding system of government financed primary health centers provides most preventive care, with the remainder delivered by physicians on public salary. Public sources of care now also provide curative care, supplanting a system of publicly financed prevention and private sector care that began to erode with passage of the General Law of Health in 1986. Two years later, 98% of the Spanish population was covered by the social security system, which increasingly converted physicians to employees of the state. Physicians who continue to work solely in the private sector provide specialized curative services and render an insignificant amount of preventive care.

Public clinics are also an important source of care in France, especially for children from low-income families; about 30% of all preventive care for children is delivered through the French system of Maternal and Child Health Clinics. In Denmark, West Germany, and Switzerland, these community children's clinics are available only in locales of special need, as for large concentrations of foreign workers' families.

Neighborhood clinics are most commonly organized and run at the community level under central government mandate and financing. This pertains in several countries where the system of public clinics is extensive (Ireland, Norway, Spain, and the U.K.), and in all countries that rely on regional clinics (Denmark, France, West Germany, and Switzerland).

In Belgium and the Netherlands, clinics are managed by quasi-public agencies (ONE/KG in Belgium and the Cross Societies in the Netherlands). ONE/KG is largely funded by government; the Cross Societies are supported by mandatory social insurance. Dutch citizens must contribute about \$25 annually to participate, but services are otherwise entirely free to citizens of all countries.

In some U.S. locales, public clinics are also critical for preventive care. In addition to low-income families, an increasing number of wage earners without adequate health insurance rely on public clinics. European respondents could not confirm full participation in care, but almost all judged the capacity of clinics adequate to need. In contrast, public clinics in the U.S. are not adequate to meet the need for subsidized care (Institute of Medicine, 1988).

Preschool and School Health Systems. European children are usually in preschool by age 4 (Tietze & Ufermann, 1989). Attendance becomes compulsory for children at different ages in various countries, ranging from 5 to 7 years, 6 being the most common. In Switzerland, there are 2 optional years; a few children attend at age 5, almost all begin at 6, and attendance is compulsory at 7. Almost all French children are in nursery school at age 4—as are 96% of Dutch children—even though school attendance does not become obligatory until age 6 (recently lowered to 5 in the Netherlands). Norwegian students begin at age 7 and attend 20 hours per week for the first 2 years, but about 60% are in kindergarten by age 6.

Concern for the health of preschool children has prompted some countries to require medical supervision of child care centers and kindergartens, including assurance of immunization, review of environmental hazards, and in some cases physical examination. French crèches, for example, which include children as young as 2½ years of age, are visited weekly by pediatricians. Belgian child care centers also include complete medical care. The school health system assumes responsibility for preschool children in Belgium and France if they attend a child care center or kindergarten, and nursery school children are usually examined by school physicians in the Netherlands and Switzerland.

For somewhat older children, school health systems are important sources of preventive care in every country surveyed. Generally, children come to the attention of school health personnel when they begin primary school, and a complete physical examination

Public clinics are the primary focus of preventive care for young children in most of Europe.

at entry is routine in at least five of the study countries. An initial examination is compulsory in Denmark and Norway.

Services are free of charge to all children. Emphasis is on screening and health promotion—rarely is curative care rendered within the school health system—and physician involvement is often limited. In countries that rely on the family doctor to deliver some preventive care, school children often continue to count on private physicians for services that are not rendered in school. In countries with little private involvement in preventive care, the school nurse and physician are frequently the same personnel that children know from the area child health center.

Physician involvement for other than the physical exam at entry is variable. Additional exams on older students are common in at least four countries, with three to four such visits during primary school being typical. Ireland favors a selective follow-up exam about 3 years after school entry, necessary for little more than one fifth of its children; Norway and Denmark require only an entry exam. Repeated examinations are actively discouraged in the U.K. as wasteful, except for children exhibiting a problem such as failure, truancy, or behavioral disorders.

Health care personnel other than physicians play a central role in school health for almost all of the study countries. Periodic screening by school nurses appears to be common, often performed annually. Testing of visual acuity and hearing were almost invariably mentioned by survey respondents, with color vision, posture, examination for head lice, and monitoring of growth also frequently cited. Psychosocial factors are commonly assessed by health personnel; yearly interviews are conducted by Danish school nurses, and social workers are often attached to the schools of larger Norwegian towns. The French system emphasizes dialogue with students, reflecting concern for the social and behavioral problems prevalent among school children.

School nurses are more apt to be full time than physicians, but most preventive care in schools is delivered by part-time visiting professionals, often under contract. Danish school physicians visit primarily

to see children about whom the nurse has questions or concerns, about one fourth of all students. Full-time clinics on school premises appear to be rare in Europe, existing primarily in urban areas of Denmark, France, and Switzerland. In the Netherlands, there is a trend toward students' receiving school health services in area public health centers.

School physicians in the U.K. may see and treat sick children on occasion, but the usual arrangement is for students with suspected pathology to be referred for treatment to an outside physician. Almost 11% of Dutch children examined in school are referred, usually to general practitioners (typically working under part-time contract with the schools) who may have no greater expertise than the referring school physicians. Maintaining a clear boundary between preventive and curative care appears to be an important guiding principle of health policy in most of the study countries, perhaps serving to shelter preventive services from the risk of competition with curative care for resources.

Parental participation in school health has been increasingly encouraged throughout Europe (Council of Europe, 1983), and parents are especially important in linking preventive to curative systems. In the Netherlands, children are frequently examined in the company of their parents, and any unusual findings are discussed with the family. In one canton of Switzerland (Vaud), families are notified in writing of results and findings at school, and primary responsibility for arranging indicated treatment or follow-up rests with each child's parents.

Health education takes place not only in the process of screening and examining children, but also through more formal connections between school health personnel and the classroom. Discussion between health professionals and teachers is encouraged in Denmark, where concerns about the educational and medical needs of specific children may be discussed confidentially. In Norway, visiting public health nurses routinely teach classes on birth control, AIDS, alcohol and substance abuse, and other health topics of importance.

Dental Care

Six of the study countries provide subsidized dental care to all children, in some cases as a part of school health. Public health dentists screen Norwegian children in school annually, routinely applying dental sealants as well. In Switzerland, where dental care is mostly private and not government subsidized, parents may choose to have their children treated by the school dentist at no charge, an unusual example of curative care through school health.

Injury Prevention

Educational efforts of health care providers in the study countries are of interest to U.S. policymakers, but other preventive strategies also deserve attention, including those external to the delivery of health care. Our survey instrument sought information on structured national programs of injury control, on educational strategies outside the health care system, and on the regulation of hazards by law. European home visiting programs and efforts to alleviate poverty, which may also contribute to the observed U.S. disadvantage in injury mortality, are discussed elsewhere in this report.

Attempts by the study countries to reduce injury seldom were initiated as single, isolated programs, and careful evaluations of program effectiveness rarely were performed. Of nine countries responding to survey questions about injury prevention, only three reported that a national strategy exists; another three described more limited national activities; and one third of the respondents indicated that their countries lack any formal national program. Nevertheless, all countries attempt both to educate the population and to regulate hazards.

Five of the study countries, including two of the three with coordinated accident prevention strategies, attempt systematically to educate parents about proper child rearing, including injury prevention. Although four countries reported some efforts to prepare students in public school for parenthood, all considered these to be of minor importance with relation to injury control. Adult classes for new or expectant parents, although not always well attended, were considered an important source of parent education by an equal number of respondents.

All respondents reported that physicians and nurses are important or very important sources of parent education about childrearing. Discussion of preventable injury is an essential part of this education, and

School health systems are important sources of preventive care in every country surveyed.

four fifths of the respondents cited the office or clinic as a primary location of education in injury prevention. Nurses may generally be more active than physicians in educating parents about injury prevention, as they were mentioned by six respondents. All countries with strong health visitor programs felt that discussing safety with parents at home was especially important. Reliance on physicians to educate parents appears to play at best a supplemental role.

The content of injury prevention education is presumably appropriate to the needs of populations served, but attempts at standardization and quality control are uneven, consisting largely of printed materials distributed by child care centers, health visitors, and others. Although less than ideal assurance that specific information has been successfully imparted, such literature is generally of high quality and is often printed in several languages to reach important minority groups. In Norway, parents are given loose-leaf notebooks by the district nurse; pages are added as the child grows, warning of new hazards associated with progressive stages of maturation.

Educational efforts through schools and the health care system are supplemented by mass media campaigns in most countries, either sponsored by the state or by nongovernmental agencies. Particular media attention has been directed toward highway safety; in addition to various ministries of health and transportation, important private organizations that sponsor such advertisements include Via Secura in Belgium, Road Safety in Norway, and the Bureau for the Prevention of Accidents (BPA) in Switzerland. Television, radio, print media, posters in health centers, and billboards are commonly employed.

Education of the public is an important aspect of health promotion, of particular value in that it emphasizes individual responsibility for health. Most educational and informational campaigns seek to change behavior, a difficult goal that may not be the most effective way to reduce preventable injury. Although some regulatory efforts (e.g. lower speed limits) also target behavioral change, many laws instead seek to alter environmental factors that either contribute to injuries or lead to more severe injury.

Respondents in the study countries were asked about specific laws, and several volunteered other restrictions.

Heightened concern about traffic injuries, fueled by education and by lobbying, has spawned a number of new laws and regulations. Six countries reported changing speed limits during the past decade; in the Netherlands, where limits were actually raised, a concomitant increase in surveillance lowered the average speed of highway traffic. Six countries require safety belts, although in three of these only passengers in the front seats must wear them. Seat belts are optional in France, but children may not ride in front. Motorcycle helmets are obligatory in four countries, and in two others they are commonly worn, possibly in response to media campaigns. In Norway children now wear helmets while bicycling, a development attributed to persistent media campaigns and efforts through the schools.

Regulations aimed at reducing hazards of buildings and swimming pools are less common. Of the eight survey respondents who described relevant statutes, two reported laws requiring smoke detectors in certain buildings, and one mentioned urban restrictions on unbarred windows in upper-floor dwellings. Others indicated that similar measures are common in at least two more countries without legal requirements. Two countries have laws prohibiting unfenced swimming pools, and Norway also has strict regulations governing wells.

Laws designed to prevent some types of home injuries are nearly universal. Almost every European country, for example, has regulations requiring warning labels on toxic household products. Five countries place restrictions on toys and play equipment, although Denmark's are guidelines only. At least three countries require that prescription medication be dispensed in childproof containers. In at least two countries, laws governing product liability provide additional assurance of safe toys and packaging.

Not all injury control consists of primary prevention. Many measures prescribed by law simply mitigate the consequences of injury. One such intervention is the poison hotline for information about suspected toxins. A telephone service is available in every country surveyed to address concerns about toxicity of various substances children may ingest and to suggest proper initial treatment, directing callers to seek medical care when necessary. Such hotlines are for the public in most countries, but in the Netherlands a similar service is used only by physicians and other medical providers.

Educational efforts through schools and the health care system are supplemented by mass media campaigns in most countries.

Public funds subsidize this service in every country surveyed.

The study countries were not queried about curative services, but declining mortality clearly also stems from improvements in emergency transport, better treatment of trauma victims, and more extensively trained acute care personnel. With respect to ambulance service, smaller size and greater likelihood of urban residence might give European countries somewhat of an advantage over the United States, but the impressive scope of America's curative care system likely more than compensates through weight of technology and availability of staff.

In general, laws and regulations appear to be less extensive or restrictive in the study countries than in the U.S., especially with regard to safety belts and highway speed limits. Of interest would be further information on alcohol and substance use by teenage drivers in Europe, and current and proposed age restrictions and limitations on driving licensure. Among the youngest children, the quality of oversight by caregivers likely outweighs any regulatory measures; a closer look at parental support and education is warranted, including appraisal of alternatives to parental care.

Extent of Participation in Preventive Health Care: Contrasts with the U.S.

In several of the countries surveyed, the percentage of children who attend the recommended well-child visits is documented. In Denmark, for example, government reimbursement for each visit permits exact tabulation of the proportion who comply with the recommended schedule. Respondents who estimated the proportion of children participating optimally noted a decrease in compliance after the first year, increasing again in most countries for children after age 5 (Table B-9).

No comparable figures are available for U.S. children, but two measures of participation in well-child care suggest that U.S. children fare poorly by comparison. The first factor is identification of a regular

source of care, and the second is immunization rates among preschool children.

Regular Source of Care

A regular source of medical care is associated with access to preventive health services (Kasper, 1987). Circumstances concerning usual sources of health care in the U.S. are very different from the 10 European countries studied.

Preventive Services in Europe. No European child or parent need ever ask where care will be rendered or how it will be paid. From one to three readily identified provider systems enroll every child in care and involve little if any out-of-pocket expenditures. This process generally begins postnatally with home visitation by trained nurses. One of the tasks of the home visitor is to assure that any medical follow-up indicated for the infant is attended to, and that the infant is linked to a continuing source of medical care.

In Denmark, Ireland, the Netherlands, and the U.K., continuing care is assured by enrolling the infant on the panel of patients for which the family's physician, usually a general practitioner, is responsible. Pediatric care is usually hospital based for purposes of consultation. In Belgium, France, Switzerland, and West Germany, the infant can be taken for follow-up care to any physician of the parent's choice under a national financing system that assures equitable access.

Visits to these providers in nearly all of the study countries are made only for illness, because yet a different system of care routinely follows infants and young children for developmental check-ups, screening, anticipatory guidance, and immunizations. For older children, public health clinics and private physicians are supplemented by government-financed school health systems.

Preventive Care in the U.S. Access to care in the U.S. is far different than in the 10 study countries. In 1980, 92% of U.S. children younger than 18 had a regular source of care. At that time, 15% of low-income children and 14% of minority children had no regular source of medical care (U.S. Office of Technology Assessment, 1988). By 1986, 18% of U.S. citizens had no regular source of care, compared to 12% just 4 years earlier (Freeman et al., 1987). This deterioration of care was associated with declining numbers of physician visits by low-income and uninsured Americans, many of whom are children.

In addition, not all regular sources of care carry strong credentials for emphasizing routine prevention. The 1980 survey data do not identify institutional settings by type; hence clinics that provide comprehensive, community-based care of an exemplary nature may be included with other clinics rendering fragmented, episodic care.

In a comparison of ambulatory care in five different U.S. delivery systems, researchers found that patients using fee-for-service physicians were least likely to receive preventive care, especially among low-income families (Dutton, 1979). In general, private pediatricians do not spend much time on preventive care (Charney, 1986). One study revealed that anticipatory guidance consumed only 8.4% of the average visit: 97 seconds for patients younger than 5 months, and 7 seconds for 13- to 18-year-olds (Reisinger & Bires, 1980). Even when efforts were made to intensify office-based anticipatory guidance and to focus it on injury prevention, the results were disappointing (Dershewitz & Williamson, 1977).

The U.S. differs from other nations in its attempt to provide preventive health care through a system of office-based physicians who are primarily concerned with treating disease (Charney, 1986). In other countries, routine preventive health care for children is rendered by public health nurses and related personnel in settings (home, school, or community clinic) different from those visited by the sick. The U.S. effort to integrate preventive health care into primary private practice settings appears to work well for middle-class families, but the system does not work well for low-income children, or for those with problems rooted in complex social dysfunction.

Low levels of preventive care also characterize patients in hospital outpatient departments and emergency rooms (Dutton, 1979). Emergency rooms are clearly not intended to deliver comprehensive well-child care and would seldom emphasize preventive services such as developmental evaluation, immunization, and anticipatory guidance. Yet many U.S. children—ranging from 16% of rural and suburban children to 34% of low-income urban children—have institutional settings, including hospital emergency rooms, as their regular source of care (Kasper, 1987).

Use of institutional settings rather than physicians' offices appears to be increasing among U.S. children, and to be only partially offset by Medicaid eligibility. One study found Medicaid coverage to be associated with only a 4% greater likelihood that low-income

No European child or parent need ever ask where care will be rendered or how it will be paid.

children would see a private physician than if they had been without Medicaid (Kasper, 1987). Because Medicaid coverage is known to be associated with increased utilization of preventive services for low-income children (Newacheck & Halfon, 1988), the increase would thus appear to be predominantly from public clinics. If emergency room use were effectively discouraged as a primary source of care, this trend toward institutional care could be beneficial, as evidence suggests that private physicians' offices are not the optimal source of preventive care for low-income families (Dutton, 1979).

Certain institutional settings can be among the most effective in rendering preventive health services. In Dutton's study (1979), preventive services were found to be greater for patients in prepaid group practices and public clinics. Morehead and her colleagues compared the quality of care delivered in five different ambulatory setting—including as a criterion the degree of emphasis on preventive measures—and found substantial differences. Among medical school outpatient departments, neighborhood health centers, group practices, health department well-baby clinics, and the Children and Youth (C & Y) Projects of Title V (usually under health department auspices), they gave the highest scores to the C & Y projects (Morehead, Donaldson, & Siravalli, 1971).

At least two well-controlled studies demonstrate that home visiting is associated with subsequent reduction in early childhood injuries (Larson, 1980; Olds et al., 1986). Despite these findings, home visiting to pregnant women, new mothers, and their infants is a rarity in the U.S. (Conyer, 1985). Comprehensive home visitation programs are present in most of the European countries considered, and injury mortality among preschool children in these countries averages 61% below that in the U.S.

School health programs in the U.S., although subject to enormous local variation, are similar in structure to those of European countries, but mechanisms to follow preschool children and ensure their participation in preventive care are almost entirely lacking in the U.S.

Immunization Against Infectious Disease

Of all routine preventive health measures, immunization against infectious disease is the most widely implemented, and for good reason. Immunization is a simple, effective, and inexpensive way to improve health. The apparent eradication of smallpox is one example of what can be achieved through aggressive, widespread coverage. In the U.S., reported cases of measles decreased by 95% within 5 years of vaccine licensure (Markowitz, Preblud, & Orenstein, 1989), and the incidence of pertussis, a disease that showed little or no decline prior to development of an effective vaccine, fell to 1% of prevaccination levels just 10 years after routine immunization began (Cherry, Baraff, & Hewlett, 1989).

Requirements. The choice of which illnesses to safeguard against is reasonably uniform across Europe, and the study nations do quite well in assuring that all children are immunized according to approved schedules. Education and promotional campaigns have resulted in widespread acceptance of immunization by parents, so that the need for legal requirements and reminders is limited.

Other than these exceptions, there are no compulsory immunization requirements in any of the survey countries: Belgium requires polio immunization, DTP and BCG immunizations are compulsory in France, Norway requires BCG vaccination of the foreign-born, and one canton in Switzerland has a statute (of questionable legality) requiring the complete recommended schedule. Child care centers in Belgium and France also require immunization.

The system in the Netherlands demonstrates one efficient method for assuring that immunizations are given. Parents receive information about immunizations when their child's birth certificate is completed, and they receive a set of punch cards—one for each recommended immunization—during the baby's second month. Each card describes where and when the child should be immunized. If the card is not stamped and returned to the Provincial Immunization Administration within a prescribed period of time, reminder letters are sent to parents, followed by a home visit when necessary.

A similar computerized tracking of immunizations for each annual birth cohort is now being implemented in England and Wales to provide quarterly reports to each of 201 districts (Begg, Gill, & White, 1989). Recent nomination of immunization coordinators for each district provides a framework for response and

accountability. In addition, blood specimens from children are being randomly tested for serologic evidence of immunity (PHLS, 1989), important to the assessment of immunization efficacy.

For the few individuals who fail to have their children immunized, approaches rely on persuasion rather than sanction or mandate. Reminders are generally triggered either by birth notification or clinic record. Missed appointments usually prompt letters or telephone calls. Survey respondents from seven countries reported that such efforts are supplemented with home visitation when necessary. Several also noted the use of public information campaigns, especially when recommendations change.

In the U.S., state laws mandate immunization of school children, but mechanisms to assure immunization of younger children are less systematic than in Europe. Circumstances vary among the U.S. states and communities with regard to providing immunizations. In many areas, no agency assumes responsibility for prompting families about the need for young children to be immunized. Public health departments are major providers of immunizations even for children who obtain other care from private physicians. In one community, more than two thirds of practicing physicians referred patients to health departments for immunizations as a measure of economy (Schulte et al., 1991). No consistent national or state-based system in the U.S. assures the immunization of young children before they reach school age—not even preschool children eligible for EPSDT, which pays for immunizations.

Rates. National immunization rates not only measure the adequacy of specific efforts to prevent contagion, but also serve as a useful index of overall participation in well-child care. Group immunization of children is sometimes done without including any of the other components of preventive care, but this practice is not usual in Western Europe or the U.S. except for occasions when groups are threatened by epidemic. Children who make frequent well-child visits are more likely to be fully immunized than those who do not (Gemperline, Brockert, & Osborn, 1989; Marsh & Channing, 1987).

The most recent available immunization figures are shown in Table B-10; the U.S. data include 4-year-olds, whereas European figures cover only children younger than 3. U.S. rates for DPT immunization among preschool children are 23 to 49% below European rates. Just over half of young children are

vaccinated against polio in the U.S., compared to at least four-fifths in the study countries. U.S. measles immunization rates are more typical of those in Europe, but remain 35% below the median among comparison countries; in addition, many of the study countries have recently initiated use of the MMR vaccine and anticipate higher immunization rates as a result of promotional efforts. The U.S. Immunization Survey was discontinued after 1985 figures were tabulated; subsequent rates of immunization prior to school entry in the U.S. are conjectural (Children's Defense Fund, 1987).

Immunization rates in the U.S. are particularly low among minority and inner-city populations (Table B-11), and overall U.S. rates fell during the first half of the 1980s (Miller, Fine, & Adams-Taylor, 1989; USDHHS, 1989). During the same period, European countries reported steadily increasing immunization rates against all childhood diseases (Bytchenko, 1988). Incidence rates of measles and pertussis in the study countries were presented in Table B-6. As rates of routine immunization among young children in the U.S. fell, increasing numbers of measles, mumps, and pertussis cases followed (CDC, 1988; Hilts, 1991; Johnson, 1990; Markowitz, Preblud, & Orenstein, 1989). These epidemics are, at least in part, a direct result of cutbacks in federal funding for immunizations and concerns about the relative risks of the vaccines themselves.

Although the figures in Table B-6 should theoretically assess the effectiveness of immunization, marked annual variation limits their usefulness. In addition to the vagaries of reporting, several other factors disrupt the relationship between immunization rates among young children and disease incidence. In the U.S., relatively high immunization rates among older children are sufficient to prevent most major epidemics, despite localized outbreaks among unvaccinated preschool children. Secondary vaccine failures are also important to outbreaks, especially of measles in school children (Markowitz, Preblud, & Orenstein, 1989; Mathias, Meekison, Arcand, & Schechter, 1989). Susceptibility among adults may vary greatly across national borders, as may endemicity. Finally, different vaccines and toxoids are used in the various countries, according to different schedules of immunization.

Schedules. The recommended immunization schedules in Europe and the U.S. show considerable, if minor, variation (Table B-12). Among the differences and similarities to be noted are the following:

Immunization is free in Western Europe.

1. BCG vaccination against tuberculosis remains routine in three countries, whereas in all others it is reserved for high-risk groups.

2. Four injections of DPT vaccine are given by 15 months of age in two countries, while in all others only three are recommended. In several, pertussis vaccine is given separately from the diphtheria and tetanus vaccines; when separately reported, immunization rates are invariably lower for pertussis than for tetanus or diphtheria, due largely to greater concern about side effects. In Denmark, polio (Salk vaccine) is combined with the diphtheria and tetanus vaccines, and children are immunized against pertussis at different times than when these Di-Te-Pol injections are given. In West Germany, concern about efficacy of the pertussis vaccine motivates some physicians to give only the diphtheria and tetanus toxoids (DT) until a new product is approved.

3. At about the time of school entry (age 4½ to 6), children in three countries receive a diphtheria-tetanus booster. A booster for tetanus only is recommended in Spain, while in the U.S. the full DPT is routine.

4. The precise schedule of polio immunizations varies considerably, but children in most countries receive three doses by 18 months of age. Most respondents reported a booster dose between the ages of 4 and 7.

Immunization Services. There is considerably less variability among the European study countries in where the recommended immunizations are administered. In four countries the majority of young children are immunized in private physicians' offices, and in four other countries almost all children receive this service in public health centers. About half of Belgian children are immunized in each of these two settings. France reports that some injections are given in child care centers. In Ireland and the U.K., visiting nurses immunize some children at home, particularly those who fail to attend health centers for care. Most countries surveyed noted that injections are given to older children at school. In four countries physicians administer most injections, while nurses are more likely than physicians to do so in three countries; in two countries the type of personnel giving most injections could not be determined from survey responses.

Immunization is free of charge virtually throughout Western Europe; in none of the countries studied are there financial barriers to immunization. Still, certain populations do not avail themselves of this service in most if not all European countries. Examples include some religious groups, children of immigrant workers, rural inhabitants, and various countercultural elements. In France and neighboring areas of Belgium and Switzerland, public health literature often refers to the "Fourth World," made up of citizens who choose not to participate in established systems of health care. In at least two countries, alternative medical providers have actively discouraged participation.

Other impediments to improving immunization coverage include fear of untoward reactions (cited by seven countries), lack of knowledge of immunization's benefits (seven countries), and various degrees of apathy or "laxness" (three countries). Inadequacies in service delivery also exist; respondents in both Norway and the U.K., for example, cite uneven community organization as a serious problem.

In summary, although problems exist in every nation, preschool children in the study countries are far more likely to be fully immunized than their counterparts in the U.S. Mechanisms invoked by European nations to achieve these results include birth registry-linked, computerized tracking of children; systematic reminder schemes, including home visitation routinely and on special indication; and extension of the school health service into the preschool age group, an approach made effective by the high proportion of 3- and 4-year-olds attending European preschools.

Only the last of these procedures is commonly applied in the U.S.; preschoolers who are enrolled in licensed programs such as Head Start are nearly all immunized, but they represent a small proportion of the total cohort younger than 3 years, by which age all schedules of well-child care recommend completion of primary immunizations.

Support Systems

Benefits Associated with Childbearing

The substantial supports, services, and financial benefits associated with childbearing in the 10 European countries as compared with the U.S. have been documented (Miller, 1987). Data are also available on tax benefits and income transfers for the purpose of alleviating poverty among households with children (Smeeding & Torrey, 1988; Smeeding, Torrey, & Rein,

These benefits are given in recognition of society's interest in the health and well-being of all children.

1988). A report from the Commission of the European Communities provides extensive data on early childhood programs among the European nations (Moss, 1988). These studies emphasize two benefits important for childbearing.

Paid Leave. Perhaps most important, each of the study countries mandates paid leave, ranging in duration postpartum from 3 weeks in Ireland to about 6 months in Germany and the U.K. (EURO, 1985). Belgium, France, and West Germany permit unpaid extension of leave without loss of job or job-related benefits (Miller, 1987). In contrast, maternity leave in the U.S.—where a far higher percentage of mothers work outside the home than in Europe—is a matter of employer option and is frequently taken without pay, sometimes without job security.

Children's Allowance. In addition to legally mandated parental leave after childbirth, direct cash payments without means testing are made to families with children in the 10 European countries studied (Table B-13). All except Denmark award birth grants or bonuses to new mothers at delivery, and every country provides monthly cash payments or family allowances to partially offset the expenses of childrearing.

These benefits are emphatically not social welfare programs to protect the poor, which also exist in every country, but are given in recognition of society's interest in the health and well-being of all children; they enable some parents to stay home and attend to their children instead of providing a second family income out of economic necessity. Additional, supplemental payments are accorded single parents in three countries, and two other countries allow for means-tested supplements to the economically disadvantaged (USDHHS, 1989).

In the U.S., a widespread belief that children are solely the responsibility of each individual family may contribute to the lack of economic safeguards for families with young children.

Alleviation of Poverty

A popular American ethic holds that adversity has a toughening effect that enhances initiative and

cultivates resourcefulness. Data point in the other direction with relation to children born in poverty.

Poor children are more likely to become ill, more likely to suffer adverse consequences from illness, and more likely to die than other children. For example, low birth weight, cytomegalic inclusion disease (the most common hematological disorder), lead poisoning, hearing disorders, functionally poor vision (vision tested with the child's usual correction), and psychosocial and psychosomatic conditions are all more common among poor children. Poor children are 75% more likely to be admitted to a hospital in a given year. Average length of hospitalization are *[sic]* twice as great for poor children and their average total hospital days are *[sic]* four times that experienced by children in the highest social class. A much greater proportion of poor children are *[sic]* unable to attend regular school because of a chronic condition than is the case for their more affluent peers. They have 30% more days of activity restriction and 40% more days lost from school due to acute illness. They are also more likely to be reported by their parents as having one or more chronic conditions, and are more likely to be found to have lasting effects from perinatal complications. Twice as many poor children have marked iron deficiency anemia as non-poor children. Poor children are much more likely to have markedly elevated lead levels and two to three times as likely to have severely impaired functional vision. Severity of illness such as asthma is greater among poor children and they have poorer survival from at least some life-threatening conditions (such as leukemia). (Starfield, 1982, pp. 532-533)

The effect of poverty is independent of other social and biologic factors. An analysis of maternal education, socioeconomic level, and childhood deaths revealed a major socioeconomic effect on the mortality of children and teenagers (Starfield, 1982).

Poverty Rates. Child health experts the world over might well come together behind the ideal that elimination of poverty would do more to improve children's health than any other dream. The ideal is more vigorously pursued in Western Europe than in the U.S. Many analysts have reviewed the sad circumstance that in the U.S. children have become the predominant group living in poverty; that the proportion increased dramatically early in the 1980s, affecting nearly one in four young children; and that circumstances for children did not improve in the late 1980s as other indicators of national economic well-being were said to recover.

Smeeding and Torrey made ingenious use of the Luxembourg Income Studies (LIS) to compare the extent to which different nations alleviate poverty among households with children (Smeeding & Torrey,

1988; Smeeding, Torrey, & Rein, 1988). The participating countries include Australia, Canada, West Germany, Sweden, the United Kingdom, the United States, Israel, Norway, and Switzerland. Israel was eliminated from their analyses because the data were incomplete. In the following review of their work, observations do not coincide precisely with the countries in our study. Data comparisons are made with reference to the study countries that are represented in the LIS reports. For purposes of comparison, Smeeding and Torrey used the U.S. government's standard of poverty, adjusting the dollar amount of the U.S. poverty line by conversion of other currencies using standard purchasing power parities. The years of reference are 1979-81.

The U.S. had more children in poverty and families with children in poverty—17.1%—than any other country in the study. Inclusion of non-cash benefits did not improve the relative condition of U.S. children; non-cash benefits are consistently more generous in the other countries. The U.S. absolute poverty rate for families with children is twice as great as the rate among other countries in the health study (West Germany, Norway, Switzerland, the United Kingdom; average, 7.9%).

The poverty of U.S. children was more severe than in other countries. Three and a half times more U.S. children were in the lowest 75th percentile of poverty (9.8%) than children in other study countries (West Germany, Norway, Switzerland, the U.K.; average rate, 2.7%). The differentials were not eliminated by disaggregating data on race. The poverty rate of white children in the U.S. was higher than the rate for all children in the other European countries.

Some family structures are more vulnerable to poverty than others. The U.S. poverty rate for children in one-parent families has received much attention (Table B-14). Other countries with a high proportion of single-parent families (Switzerland, Norway) protect them from such high poverty rates.

All countries alleviate poverty to some degree in households with children, either by means of tax or transfer benefits (Table B-15). None of the countries has entirely eliminated poverty among households with children, but whereas U.S. programs reduce the pre-transfer poverty population by 17%, programs in other countries reduce the number of families in poverty by twice as much.

Approaches. U.S. programs differ from European approaches in two important respects. U.S. pre-

Elimination of poverty would do more to improve children's health than any other dream.

transfer/post-tax programs generally are means tested, whereas European programs are broader, relying on social insurance based on employment history and on children's allowances across all socioeconomic groups (Table B-15).

Medicare for the elderly is the major social insurance program in the U.S. that is not means tested; as a consequence, the per capita social spending for children relative to spending on the elderly is less generous in the U.S. than in Europe. Table B-16 demonstrates that when per capita social spending for the elderly is held constant at 100 in all countries, the U.S. spends less per capita on children than any other country. No evidence suggests that U.S. spending on the elderly is excessive or even sufficient, but the evidence is abundant that U.S. spending on benefits for children is inadequate.

The second major difference between U.S. and European programs is the participation rate of low-income families in programs for which they are eligible. In other countries efforts are made for the programs to be inclusive—reaching all eligible families.

In the U.S., through budgeting caps, enrollment barriers, and state eligibility limitations, the programs have the effect of being exclusive—designed to keep people out. Fewer than one half of low-income families in the U.S. participate in such poverty-alleviating programs as the Supplemental Food Program for Women, Infants and Children (WIC), Food Stamps, Aid to Families with Dependent Children (AFDC), Medicaid, and Head Start. In the European countries virtually all families participate in social benefit programs for which they are eligible.

Early Childhood Programs

Vigilance over the safety and supervision of young children in the U.S. is a matter of growing concern. The contributory factors are especially great because of the large proportion of parents working outside the home and the expense and inadequacy of child care. Mothers of more than half of preschool children in the U.S. are employed outside the home, 80% of them full time (Table B-17). Fifteen percent of all U.S.

Evidence is abundant that U.S. spending on benefits for children is inadequate.

households with children have a preschool child in a lone-parent family; 59% of those parents are employed outside the home (Table B-18). These circumstances require provision for child care far in excess of the European countries studied, yet our access to good quality child care services is far less than in Europe.

The value of good early childhood programs has been documented in many studies. Accredited preschools and child care centers are known to be safe (Chang, Lugg, & Nebedum, 1989). For poverty-level children, early childhood program participation is associated with improved health and socialization into young adulthood (Lazar & Darlington, 1982; Weikart, 1989). Head Start is the most extensive public preschool program for low-income children in the U.S. Twenty-two percent of 3- to 4-year-olds qualify, but the programs enroll only 20% of those who are eligible (Weikart, 1989).

The U.S. has a smaller proportion of 4-year-old children in preschool programs than any of the other countries studied (Table B-19) despite the high proportion of mothers of preschool children working outside the home. Even among our most affluent families, preschool participation rates (53%) are lower than in Europe. Among low-income families, only 29% of U.S. 4-year-olds are in such programs. Kamerman emphasizes that neither maternal employment nor out-of-home child care is a condition that is in itself harmful to children (Kamerman, 1984). What may be exceedingly harmful are makeshift arrangements for child care.

Availability and Cost of Care. Favorable child care circumstances are more characteristic of Western Europe than the U.S. (Moss, 1988). European 3- to 5-year-olds are typically cared for in government-regulated and -subsidized programs at little if any cost to their parents. The supply of such placements is generally sufficient to meet the need. Child care for infants and toddlers up to 3 years of age is also regulated and subsidized in Europe, but not always in a quantity sufficient to meet the demand, resulting in a "gray market" of uncertified care in some countries and waiting lists in others. Fees for certified and public day care are determined on a sliding scale that seldom

exceeds 20 to 35% of actual cost. Many centers are open from 6 a.m. until 8 p.m.; in some areas centers are open 24 hours a day in order to accommodate the children of parents who work at night (Moss, 1988).

High quality infant and toddler care for children younger than 3 is both rare and expensive in the U.S. For infants and toddlers, care in homes predominates, often without benefit of registration or regulations for safety. For 3- to 5-year-olds, care in preschools or licensed centers predominates; about 25% of children are cared for in their homes or family day care which may or may not be registered (Kahn & Kamerman, 1987).

A study in North Carolina estimated that only 15% of registered child care slots were in family day care homes, even though child care for two thirds of the young children of working mothers takes place in homes. About 40% of U.S. preschool children are in family day care arrangements, 70% of which are unlicensed (Stipek & McCroskey, 1989) or unregistered (Garrett, 1988). The average annual cost is a formidable \$3,000, representing 10% of the average annual household income (Stipek & McCroskey, 1989).

Children's Safety. Most preschool injuries occur in homes. For children under the age of 5 in the U.S., 91% of all injuries and 50% of all deaths from injuries happen at home (Dershewitz & Williamson, 1977). An even higher proportion of deaths from injury are caused by inadequate supervision; nearly half of motor vehicle-related deaths among 1- to 4-year-olds occur to nonoccupants, often in driveways or parking lots. Pedestrian death rates are highest among 1-year-old children (Baker & Waller, 1989).

Temptations are strong to assert that young children are safer in licensed child care centers than at home. Some reports support but fail to establish this contention (Rivara et al., 1988; Wheately, 1973). Studies have not been done on the even more likely supposition that children are safer in regulated child care centers or under parental supervision than in unregulated child care. Bapat reported on a 10-year experience in Connecticut involving 1,110 licensed child care centers and 49,000 children; there were no fires, drownings, major injuries, or deaths; and the children had a 95% immunization rate (Bapat, 1986).

All of the information we gathered—about children's health status, the organization and delivery of care, the extent of participation in preventive care, and support systems—is summarized in the next section of this document.



Conclusions

A cluster of questions defined the scope of this project. Conclusions are framed with reference to those questions, drawing on previously described materials.

What is the status of children's health?

Just as rates in the U.S. for low birth weight and infant survival are less favorable than in the study countries, so also are important indicators of child health and survival. Childhood mortality rates are higher in the U.S. than in Europe at all age levels, most markedly among 1- to 4- and 15- to 19-year-olds. Deaths from congenital anomalies, malignancy, and contagion appear to be comparable in all advanced industrial nations.

Excess U.S. deaths are almost entirely attributable to injuries. The causes of fatal injury are very different in the two U.S. age groups with greatest excess mortality. Automobile-related deaths are important to both 1- to 4- and 15- to 19-year-olds, but pedestrian rather than occupant deaths are more prominent among younger children. Other important causes for high mortality rates for 1- to 4-year-olds, as with pedestrian deaths, relate to inadequate caregiving and supervision. Drownings, falls, and death from fire or flame are serious problems. Homicide is also an important cause of fatal injury.

Excess U.S. deaths among 15- to 19-year-olds are overwhelmingly associated with violence, predominantly automobile crashes and homicide by handguns. The drug culture is generally thought to have intensified U.S. teenage violence and an associated cluster of health problems.

U.S. children are less protected against poor health than European counterparts, as measured by several

important risk indicators. Immunization rates for U.S. preschoolers are lower than in Europe, indicating reduced participation in well-child care. U.S. children are also less likely to have a regular source of medical care, a circumstance virtually unknown among European children. These risk factors suggest a similarly reduced participation for U.S. children and their parents in routine counseling, anticipatory guidance, and early screening for developmental aberrations. Data are generally insufficient to document adverse consequences from these slights, but it remains highly probable that U.S. children suffer from neglectful oversight of their health.

What are the standard preventive services for children? To what extent do children routinely receive these services? What systems assure participation?

Review of recommended preventive health services reveals some variation among the study countries as to content, timing, and frequency of visits, but the programs are more remarkable for their similarity than for their differences. Patterns of recommended preventive and well-child care are not strikingly different from those proposed by professional groups and public health agencies in the U.S. Routine developmental assessment by standardized testing of all 7-month-old infants in Denmark is noteworthy.

The truly remarkable aspect of preventive health services in Europe is the nearly complete participation of children. Compliance with the full schedule of visits generally exceeds 90% during the first year, falling off to 70 or 80% in the preschool years, and increasing

to high levels during the school years. Completed immunization rates among young children are also generally above 90%, suggesting that nearly all receive essential elements of preventive and well-child care. By age 3 or 4 nearly all European children are enrolled in public preschools that incorporate or are closely linked with programs of health care.

U.S. comparisons are of interest in the first instance because of the absence of reliable data. No tracking system routinely monitors the health status or health care participation of all children. Periodic surveys gather data on the number of physician visits for both sickness and well-child care, but no data exist on the proportion of children who comply with recommended visiting schedules; even data on immunizations are out of date and inadequate, relying extensively on self-reported recall data. All available indicators signal that participation of U.S. children in preventive health care is well beneath the European experience.

Six of the European study countries rely on public clinics to provide routine preventive services to children. In these countries, all children are linked to two sources of care: a public clinic for routine preventive and well-child visits, and a practicing physician for consultation and sickness care. Comprehensive and continuous care is achieved, but without expecting that all appropriate services are rendered by one provider or under one roof. Home visiting is extensively practiced, usually by specially trained nurses. They counsel on child care and environmental protection, and in some countries give immunizations, perform physical examinations, and test for developmental progress.

Comparable to circumstances in the U.S., countries that rely on practicing physicians' offices for both preventive and sickness care also provide public clinics for underserved populations (often immigrant workers' families); but, quite differently from the U.S., nearly all European countries monitor children's health and health service participation by means of home visitors or computerized tracking systems.

Strikingly different from the U.S. are payment procedures. All health services to European children, whether at home, in clinics, or at physicians' offices, are rendered without fee payment or proof of payment required at the time and place of service delivery. All health care for children is financed under national systems that assure financial coverage of the entire population without means testing.

Comprehensive and continuous care is achieved in Europe, but without expecting that all services are rendered by one provider or under one roof.

What supports are routinely linked to children's health care? What are the linkage mechanisms?

Supports for families with children are extensive: paid parental leaves prenatally and in the early months of life; relatively easy access to child care; high rates of enrollment in early childhood programs; monthly cash payments in the form of children's allowances beginning at birth and continuing until age 16 years or longer for completion of an extended education; access to the full range of health care without patient payment; free education and low-cost higher education for those who qualify; and preventive health care routinely provided in association with schooling beginning at age 3 or 4. All of these benefits are available to everyone without means testing. Participation in these benefit programs is nearly complete for all who are eligible. Additional benefits are available for the unemployed, the handicapped, or for otherwise vulnerable populations.

The matter of linking support systems to health care is greatly simplified by the nature of many benefits. Obstacles are not created to exclude the ineligible; all children and their families are entitled to extensive services. Provider systems are adequate in distribution and scope to fulfill entitlement obligations. Participation is increased by home visitors who are responsible for defined populations in specified geographic areas. The Netherlands facilitates universal participation by the use of computerized punch cards that indicate to a central office that a scheduled visit has been completed. Rather than linking support benefits to health care, the European practice is to link health care to the benefit of universal free schooling, beginning at 3 or 4 years of age.

Full availability of health care and social benefits programs came about in Europe only after the failure of an earlier selective approach. Several countries (e.g. the United Kingdom, the Netherlands) established risk registries during the 1950s to facilitate the tracking of infants and young children thought to be at special risk of developmental problems. The system failed because most children in the risk registries turned out

to be normal and were perhaps unnecessarily stigmatized; about half the children with subsequent problems had not been included in the registries. Circumstances were succinctly summarized more than 20 years ago:

The widespread adoption of the idea of an "at-risk" register for the detection of handicapping diseases in infancy has led to a situation in which an undefined population is being screened for undefined conditions by people who, for the most part, are untrained to detect the conditions for which they are looking. The "at-risk" concept is an unsound basis for the detection of handicapping disorders; there is no alternative to the clinical examination of all infants in the neonatal period, their screening for metabolic and auditory defects at the proper ages, and the careful observation of every infant's developmental progress by doctors, supported by health visitors. (Richards & Roberts, 1967, p. 711)

The well-trained European health visitor, working with a defined population and knowledgeable about area providers and bureaucracies, provides critically important linkages among children, the health care system, and appropriate support systems. The effectiveness of home visitation programs would be greatly compromised by exclusionary eligibilities for essential services.

A careful review of lessons learned from longitudinal research adds caution to exclusionary rather than widespread approaches for identifying and serving

Preventive health care in Europe is routinely provided in association with schooling beginning at age 3 or 4.

children with special health care needs (Chamberlin, 1987). After review of many longitudinal studies, Chamberlin concludes:

Early intervention programs can benefit many children and families. . . . Targeting programs only to various high-risk groups is not an effective strategy because:

- We cannot accurately predict the individual developmental outcomes of most young children.
- There is a definite hazard of producing iatrogenic disorders by following large numbers of at-risk children in treatment-oriented clinical programs. . . .

A child's developmental status at any one time is the result of a complex interaction between the biologic characteristics of the child and his or her social environment. Over time, measures of family status and functioning are better predictors of developmental outcomes than abnormal birth histories and/or early signs of neuromotor dysfunction. More emphasis needs to be put on prevention by seeing that basic parent education and support programs are available to every family in a community. (Chamberlin, 1987, p. 246)



Directions for U.S. Policy

The U.S. has been through a decade of health policy that emphasized market systems featuring deregulation, individual responsibility, and volunteerism. The impression of most analysts is that these approaches have not worked (Enthoven, 1988; Fein, 1986; Fuchs, 1988). Important indicators of child health have worsened, or previous favorable trends have slowed (Miller et al., 1989). The approach that works in the countries represented here features an acknowledged responsibility for central government to engage in explicit policy formulation, to finance, organize, plan, set standards, and to monitor child health.

In all these respects, government is regarded as the solution, not the problem. Even with all of these governmental endeavors, the implementation of health policies and programs is regarded as a matter for local community responsibility. Regulatory authority, resource distribution, and payment mechanisms are worked out at the highest levels of government. Community government implements a residual obligation to serve as the guarantor provider for essential services, even when private provider systems are extensively utilized.

National Health Objectives for Children

The weakness of the U.S. government's role in formulating explicit child health policy is manifest in procedures that led to development of health objectives for the nation for the year 2000. No work group was established to recommend objectives for children. This omission reflected the mistaken belief that the needs

of children would be addressed if broad topical priorities were considered for entire populations. Planners in the Office of the Secretary, Department of Health and Human Services, finally capitulated to pressures from children's advocates and aggregated age-specific objectives that were culled from the topical priorities.

The theme that pervades the objectives for the year 2000 is that if society takes care of everybody, of course children will be cared for as well. The record does not support that claim. Experience in this country and abroad indicates that a separate priority for children is required, or they get pushed to the end of the queue. That perspective is not new, but it is insufficiently heeded in the U.S. Silver wrote more than a decade ago:

Universal entitlement to medical care will not automatically provide preventive services to children. A national program aimed specifically at children, staffed by child specialists with a preventive orientation working in local centers particularly accessible to children, is absolutely necessary for child health care. (Silver, 1978, pp. 44-45)

The formulation of explicit measurable national health objectives is a potentially potent instrument of public policy. It could identify priorities, support them with appropriate regulatory and financing authority, and enable public accountability for provider systems and expenditures. These prospects are dimmed by indications that federal agencies regard the objectives as guidelines for action by others—states and local communities—but not for governmental initiatives at the national level.

In consideration that every nation copes with budgetary constraints on health care, the European

programs presented in this study are impressive for not being expensive. Full participation of children in health care has not cost a lot of money, as measured by the proportion of GNP spent on health care. Those figures tell only part of the story, and the rest of it defies accurate reporting. Health expenditures, especially of a preventive nature, are known to be incorporated in such diverse governmental budgets as education, social security, defense, agriculture (U.S.), transportation, and housing. Aggregating these budgets and comparing them across nations is such a daunting endeavor that it has not been reported. Analysts at the seat of the European Community in Brussels are said to be engaged in such work for European nations.

One of the most impressive aspects of health policy implementation among the European study countries is the realization that the programs were put in place not because of extensive documentation on cost effectiveness, but out of a value system that cherishes equity in health care. The U.S. preoccupation for excluding people from care and for exercising stringent criteria on cost effectiveness for preventive care, as opposed to a loose approach for support of expensive ways of dying, are enormous obstacles to achieving widespread and equitable access for children's health care.

When people speculate on what might best be done to improve children's health in the U.S., a caution is often introduced: we mustn't ask for too much. A greater risk attaches to asking for too little. A Third World quality begins to characterize conditions for many of this country's children. No single intervention and no simple solution holds promise for reversing those circumstances for all population subgroups. Multiple approaches will be required for children and families whose problems are diverse and complex. The conditions shared by most children whose futures are jeopardized by poor health, developmental delay, or social dysfunction constitute a kind of societal by-pass. These children are not effectively reached by a variety of supports and health services—doctors, clinics, child care, schools, welfare—that work for most other children most of the time.

Documentation of the social by-pass of children is well established. Most indicators of child health improved during the decades of the 1960s and 1970s. With passage of the Omnibus Budget Reconciliation Act of 1981, children's protective health services and social supports—which had never been more than marginally adequate—were cut as much as 28%, more

The European programs are impressive for not being expensive.

than any other part of the budget. In later years, when these cuts were restored, the conditions of children and young families had deteriorated so dramatically that the support programs never reached the same protective levels relative to need that existed before 1981.

Responding to Children's Needs

Efforts to remedy circumstances for neglected children should begin with the realization that in spite of appropriate concern for their well-being, the perception is widespread that most children in the U.S. are thriving, and that their sources of care and support serve them well. For that reason, calls for radical system changes in health services, child care, or education are apt to go unheeded. The challenge for policy analysts is to make existing systems more responsive to the needs of all children, incorporating those who are now by-passed.

Children have replaced the elderly as the predominant age group living in poverty (Figure B-1). Moynihan (1986) points out that we may be the only society in history that has selectively repressed the prospects of children more than any other age group. For the first time in our nation's history, children face the prospect of downward socioeconomic mobility. The median benefit from Aid to Families with Dependent Children (AFDC), calculated in 1986 dollars, fell during the period between 1970 and 1986. In 1987 the mean payment standard for all the states was pegged at less than half of the federal poverty level (Palmer, Smeeding, & Torrey, 1988).

When we look for the causes and cures of poverty, we find them in the generational trends in social welfare spending. Trends in spending for health services and social supports are mirror images of the generational trends in poverty. Between 1981 and 1986, the following changes in U.S. government spending occurred (Benjamin, Newacheck, & Wolfe, in press):

- Real per capita Medicaid spending for children declined 4%.
- Real per capita Aid to Families with Dependent Children declined 5%.

- Real per capita Social Security spending for surviving children decreased 25%.

In contrast:

- Real per capita Medicare spending for elders increased 14%.
- Real per capita Social Security spending for elders increased 17%.

The accumulative impact of these changes is shown in an examination of the trends in per capita social spending in the U.S. from 1965 to 1986. Spending for the elderly increased; spending for children flattened. A popular ethic holds that the elderly, unlike low-income families with children, have earned generous benefits through wage contributions and long lives of hard work. That perspective needs to be tempered by the realization that benefits for the elderly have increased to such an extent that prior contributions are used up after the first few years of Social Security eligibility.

Intergenerational comparisons of health status are difficult, considering that survival prospects differ by so many decades. But even in this murky endeavor some evidence commands interest. Activity limitations for children increased throughout the 1960s and 1970s (Figure B-2; Newacheck et al., 1986). Presumably a large part of that increase can be attributed to improved reporting, a phenomenon that should pertain to all age groups. But data on bed disability days suggest that trends have moved in opposite directions for the generations (Table B-20). Bed disability days for children increased, while the trend for the elderly declined. When these observations are extended through 1987, the number of activity days and bed disability days tends to level off for all age groups except for children younger than 5 years of age. Between 1982 and 1987 these indicators for the youngest children increased by 30 and 19%, respectively (NCHS, 1989a).

In the U.S., income levels, relative prosperity, and important measures of well-being for the elderly and for children are moving in opposite directions. No one wishes trends for the elderly to regress; we wish instead for major indicators of well-being for all ages to improve. Political trends are not working to achieve that end. Divergent trends in social spending for the elderly and for households with children invite speculation that children compete with grandparents for resources. That unattractive formulation requires thoughtful examination. Every developed nation sequesters a portion of the wealth generated by

A separate priority for children is required, or they get pushed to the end of the queue.

productive workers in order to provide comfort and support to vulnerable nonproductive populations. Those populations are predominantly the elderly and children.

This country approaches support for those two groups in very different ways, unlike Western Europe where support for both groups comes largely from Social Security funds. In the U.S. the elderly are supported, not entirely or maybe even sufficiently, by a nationally consistent program of payroll withholdings that are more or less protected from encroachment for other purposes. Households with children, on the other hand, are supported by programs financed out of general tax revenues and implemented at vastly different levels of competence and generosity by the various states. The result is that the needs of children are much less adequately and consistently met than those of the elderly.

Children in fact are not competing with the elderly for social benefits. Children are competing at the national level with preparations for war and with subsidies to the savings and loan industry; and children compete at the state level with expanding budgets for prisons. Children will always be crowded out in these competitions. We should consider establishing protected financing sources for children, as we have done for the elderly.

Some issues specific to children's health are best considered in the context of general policy reforms of importance to children but involving services that target larger populations. Alleviation of poverty is an important example. Unless income transfers and tax benefits are adjusted to reduce poverty to the greatest extent possible and equitably across all age groups, services intended to compensate for pernicious deprivations among children will continue to face nearly impossible tasks.

Another example is the reduction of unintended pregnancies. The unwanted children who result from many of these pregnancies carry a heavy burden of neglect, ill health, and excess mortality. A recent analysis in North Carolina, ranked 50th among the states in infant mortality, estimates that 45% of newborns result from unintended pregnancies (Buescher, 1990). The death rate for unwanted infants

The challenge for policy analysts is to make existing systems more responsive to the needs of all children.

(19.1/1,000 live births) is twice as high as deaths among planned infants (9.9/1,000 live newborns). A social policy that fails to address unwanted childbearing escalates the need for subsequent supports for children and young families.

Financing Health Care

The removal of economic barriers to health care for children and childbearing women is high on the list of urgently needed reforms in the U.S. Current approaches feature expansion of Medicaid eligibilities and benefits to include larger numbers of low-income children and pregnant women. That initiative will help hospitals solve their problems of uncompensated care, but it may do little to improve the health of women and their infants. Nearly all childbearing already occurs in hospitals, and no evidence supports the hope that medical insurance, either public or private, stimulates growth of the comprehensive community health services that are known to improve pregnancy outcomes or assure preventive care for children.

In some areas, expanded Medicaid eligibility increased the demand for comprehensive prenatal care, but the legislation failed to increase community capacity to provide care (Aronson et al., 1989). In North Carolina, Medicaid eligibility was increased to 150% of the poverty level in 1987. No provision was made to increase the facilities and staff of public health clinics, although prenatal visitations increased by 30%. Waiting times for first prenatal appointments exceeded 3 weeks in one quarter of the counties. The state's infant mortality rate increased in each of the first 2 years of expanded Medicaid eligibility (Buescher, 1990; Williams, 1989). Colleagues from Los Angeles report that appointments for a prenatal clinic visit were recently delayed as long as 4 months (Silberman, 1990).

Reports are not yet available on the effect of new Medicaid eligibilities on the utilization of care, such as EPSDT, by children. In the absence of expanded community service systems, prospects are guarded. A recent measles outbreak in Milwaukee affected large numbers of young children who were not immunized, although eligible for EPSDT (Johnson, 1990). For 20

years the benefits of EPSDT have been inadequate for those children who have been eligible all along.

New policies for Medicaid expand eligibilities up the income scale, retaining an exclusionary means-tested approach to certification for benefits. At least two problems persist. Low-income families may be excluded, not because they fail to meet income criteria, but because they fail to comply with procedural requirements. Across the country from 1985 to 1986, 60% of Medicaid rejections occurred on that basis (Shuptrine & Grant, 1988). Breaking the link between AFDC and Medicaid may ease the constraints, but an exclusionary policy persists.

The second problem relates to provider access even when certification has been achieved. The willingness of pediatricians to serve as Medicaid providers declined during the 1980s (Yudkowsky et al., 1990). Families in the upper ranges of eligibility can probably find their way to appropriate providers. The lowest ranges will probably continue to be underserved in the absence of new initiatives to expand provider systems tailored specifically for them.

Recommendation: The most promising financing prospect is to remove certification reviews entirely and to assure health insurance coverage for all infants, children, and childbearing women. Coverage through job-related insurance, regulated to assure appropriate preventive benefits, probably would continue for employed parents and their dependents. A public insurance program with comparable benefits would be extended to everyone not otherwise covered. Discontinuing payment or proof of payment at the time and place of service delivery would remove a powerful disincentive for preventive and well-child care.

Extending Provider Systems

Discontinuing economic barriers to health care will not assure participation for people who cannot find suitable providers. Geographic, cultural, and social barriers are substantial; providers are nonexistent in many inner-city and rural areas. The community health center initiatives of the 1960s under the Office of Economic Opportunity and Title V of the Social Security Act—Children and Youth (C & Y), and Maternal and Infant Care Projects (MIC)—showed high promise but fell victim to ideologic and fiscal retrenchments. Successive waves of New Federalism featured a minimalist view of federal responsibility for sponsoring services. As holes in the safety net became

A public insurance program with comparable benefits would be extended to everyone not otherwise covered.

impossible to deny, federal sponsorship of community health centers underwent gradual expansion to more than 500 during the 1980s, in apparent contradiction of the administration's policies of government retrenchment.

Unfortunately, federally sponsored community health centers lack the comprehensive character of their predecessors; they are little more than walk-in clinics. Job training, housing, environmental protection, transportation, and outreach are generally lacking or inadequate. Most unfortunately, centers lack responsibility for a defined population and a defined jurisdiction. Exemplary care may be rendered to people who come through the doors, but means to reach others are generally not available.

Some combination of endeavors by federally sponsored community health centers and state and local health agencies is urgently required. Title V of the Social Security Act (the Maternal and Child Health [MCH] Block Grant) provides an advantageous, if unfulfilled, mandate for the health of defined populations of children, plus a political and organizational permanence that can help institutionalize projects with temporary sponsorship. Title V is the only national health financing and service program that is exclusively and unambiguously focused on children. Other measures, such as Medicaid, place children disadvantageously in competition with their elders for funds.

The Title V agencies suffer from a long history of marginal financing, along with a reluctance to exact accountability for expenditures and programs. The lack of accountability is not dereliction; it reflects Executive Branch ideology on federal-state relationships. In the first wave of New Federalism during the Nixon Administration, the state Title V agencies filed annual plans, as required by Congress, in federal regional offices. The granting authorities in the Washington office were forbidden to read the plans. In the second wave of New Federalism, implemented by the Reagan Administration, Title V grants were merged into MCH Block grants to the states. In order not to inhibit state-level discretion on use of the funds, the administration refused to provide guidelines, measurable objectives, or public accountability for Title V expenditures.

Prospects are now improving. New regulations enacted by Congress (the Omnibus Budget Reconciliation Act of 1989) limit state-level discretion on Title V expenditures, require federal review of state plans to improve child health, and link program development to the Medicaid-eligible population and to strategies that will help achieve the national health objectives. These are promising reforms, provided funds are sufficient for their implementation.

Direct federal initiatives that supplant inadequate state and local services can further weaken local sponsoring agencies (Lemann, 1988). This occurs when federal initiatives, which usually are supported by short-term grants, are abruptly reduced; with the means for local remedy diminished, local circumstances may deteriorate further. Other prospects could prevail; institutionalized merger of federal and local public health endeavors could strengthen local institutions and could make their services both comprehensive and durable. Examples include the excellent programs of comprehensive community health services developed in Denver and Cincinnati during the 1970s (Miller & Moos, 1981). Additional fiscal safeguards would strengthen the durability of such programs.

Physician-centered office or group practice will almost certainly continue to predominate for health care in this country. Even as public or corporate payment and organization for care increase, traditional medical practice models show every prospect of enduring. With equal certainty, additional models of care are required for families who are unreached by traditional provider systems. Even if economic barriers are removed, existing systems of care will not reach all underserved children. A dilemma is posed by the supposed unacceptability of solutions that imply a dual or two-tiered system of care. Surely a nation that cherishes pluralism and choice in health care can manage at least one system that promises to reach neglected populations. Few people are attracted to tiers on the basis that one serves the rich and another serves those in poverty, although that might represent an improvement over neglect of low-income people except at times of crisis.

Dichotomous private and public tiers of care represent an oversimplification. Significant public and private components of care prevail in many of the European study countries and the domains blend, as they do in this country. Private physicians may be paid with public funds, and public clinics may be staffed in part by private physicians working under contract.

United States health policy adheres to a sentiment that favors a unified vision of services—preventive, curative, and rehabilitative—all from one provider. That vision is a chimera.

Medicine in the U.S. cleaves to a philosophy of unity of preventive and curative services and unity of provision of these through the physician. It hardly matters that physicians, despite Herculean public and academic measures, have failed to exhibit any interest or concern for preventive medicine. (Silver, 1978, p. 233)

Circumstances during the 1980s did little to soften Silver's analysis. Pronouncements urging preventive care for children manifest a rising medical interest, but problems of actual participation and access remain obdurate. Separate preventive/curative tiers prevail in the study countries without a rigidity that disallows a prevention clinic from coping with an inflamed ear. Sick children are not encouraged to seek care in the public clinics; another source is available to them. But if they show up in the preventive clinics, the nurse practitioners and supervising physicians have skills to cope with most ambulatory problems.

Publicly financed clinics in the European nations with the best records of preventive care feature extensive use of nonphysician providers. More comprehensive clinics tend to be dominated by physicians who are uniquely qualified to render curative services but less oriented to prevention (EURO, 1985). Expanding the use of nurses and other nonphysician personnel is an effective measure that can also help limit the costs of universal preventive care.

Constructive interaction involving public agencies and private providers is illustrated by the expanded implementation of EPSDT in South Carolina (Liu, 1990). In 1989 the state's ratio of EPSDT screenings to eligible children was the highest in the nation: 83 screens per 100 eligible children; 167 screens per 100 eligible children younger than 5. Three agencies were involved at the state level—the Medicaid agency, the state social services agency, and the health department. Local providers included health departments, community and migrant health centers, and private office-based physicians. Registered nurses from the health department worked under contract with the Medicaid agency, and made home visits to every Medicaid-covered newborn. The home visitors established linkage to primary care providers in order to ensure continued Medicaid participation. A few years previously, public health centers provided nearly all of the EPSDT screens. Linkage of public health nurses with private

Some combination of endeavors by federally sponsored community health centers and state and local health agencies is urgently required.

physicians increased their participation to provide one quarter of all EPSDT screens. The state could not have achieved the present high EPSDT screening rates without private physician-public health interaction (Liu, 1990).

In a discussion of criteria and guidelines for reforming the U.S. health care system, Shortel and McNerney dealt with the issue of multi-tiered systems of care in the following way:

The issue is not whether we have two or more levels of health care in this country or whether we are now rationing health care services. To both questions, the answer is obviously yes. The real question is how we can provide everyone with access at least to minimal basic services of acceptable quality. To be viewed as a responsible nation—not altruistic, charitable, or loving, but responsible—we must include the disenfranchised. (Shortel & McNerney, 1990, p. 464)

Children account for a large proportion of the medically disenfranchised population in the U.S., and their minimum basic services are conspicuously deficient with regard to routine preventive care.

At a conference on health policy, one discussant developed the formulation that the U.S. has systems that regard individuals as clients; we do not have satisfactory service or financing systems that regard the community as client (American Academy of Pediatrics, 1990). Regarding the community as client and developing appropriate community services may enable fulfillment of a social obligation to guarantee basic and essential services not otherwise provided, and for children not otherwise reached. Such an endeavor may represent a tier of care that is both necessary and desirable. Enlightened policy cannot adhere to the position that what is done only for privileged people is the best approach acceptable for everyone; that policy will not be implemented. Every effort for organized public health action cannot be dismissed out of hand on the basis that it represents a second tier. That thinking gives sanction to the continued neglect of many people.

In fact, evidence begins to accumulate that public clinics more adequately address the complex medical

and social problems of poor people than traditional providers. From 1986 to 1988 the infant mortality rate in North Carolina for Medicaid women served in health department clinics (partially financed through Title V) was 11.0. For the same period Medicaid women who were served by other providers, largely practicing physicians, had a rate of 15.3 (Buescher, 1990). Medical care is presumably entirely adequate in all settings, but only the clinics provide WIC, transportation, home visiting, and organized programs to promote cessation of smoking and substance abuse. Similar findings, comparing pregnancy outcomes in different provider systems, are reported for Kentucky and South Carolina.

Recommendation: In nations committed to pluralism, several simultaneous approaches to health care are required in order to reach everyone, and both federal and state/local governmental sponsorship are necessary for some of them. The mix of sponsorship and the scope of services—comprehensive on-site care, or preventive care with closely functioning linkage to more complex services—will vary according to local circumstances, as they do among the European nations. That variance should not be so loose as to forego the need for nationally established standards of care defined by health status measures that are applied to all political jurisdictions. Areas of deficient performance become readily identifiable targets for intensified effort. The Health Objectives for the Nation and Model Standards for Community Preventive Health Services help provide the means for achieving those ends.

Tracking and Linkage

Nearly all U.S. infants are born in hospitals and all births are registered with official agencies when birth certificates are filed. Five years later nearly all children register for enrollment in public schools. In between these mooring points many children are at sea—perhaps nurtured by caregivers who can marshal and coordinate resources adequate to meet the full range of their health care needs, but perhaps not.

The 1- to 4-year-old age group suffers from the nation's biggest hiatus in societal oversight for the well-being of children. The first year or 2 of school at ages 5 and 6 becomes a sorting-out period to identify and cope with the accumulated neglect of health and developmental problems which might have been identified at a younger age.

Surely a nation that cherishes pluralism and choice in health care can manage at least one system that promises to reach neglected populations.

European countries provide better oversight for young children. Tracking systems are uniformly begun at birth and are consistently rooted in health care. Notification of local health authorities, registration with a physicians' panel, expanding the roster for health visitors, issuance of computerized punch cards—all these strategies begin at birth and are designed to assure continuing participation of the infant in one or more systems of health care. As early as 2 years of age, transition to tracking through the educational system, often to health clinics associated with schools, may occur—but tracking always begins with the health care system.

Promising Models: Designs for a nationally consistent system for tracking 1- to 4-year-olds in the U.S. confront enormous and diverse problems: usual providers include a large array of both public and private sources that share no common recordkeeping system; people are not required to be registered at all times by government-issued identification cards that are linked to records on everyone's whereabouts (e.g., Belgium); and we have no single-source payer for all health expenses (as in Denmark) that can be used to match reimbursements with census data. Even with these handicaps some promising models for tracking in the U.S. are beginning to emerge.

One example is the Utah Plan. In this program, all new mothers are issued a booklet containing educational materials and recordkeeping pages specifying all health care visits and procedures for the infant. Each booklet contains postal cards that are keyed to each recommended visit. Gift certificates are given to the mother when she mails the appropriate cards. Data from these mailings are entered into a computer for continuous tracking of all infants and young children. Mailings can be matched with birth certificates to identify children for whom no card was received, enabling follow-up procedures to be instituted to complete records on the missing children.

Health Care Coordinators

National attention to problems of high infant mortality rates has prompted organized community action to

Tracking in Europe always begins with the health care system.

expand comprehensive prenatal care. Both patient demand and expansion of services are most impressive among health department-sponsored clinics (Title V) or among clinics expanded with the help of health department contracts. (Regional traditions differ; in some parts of the country, e.g. New England, local public services are often organized by community agencies such as Visiting Nurses Association, Community Health Clinics, or Community Action Agencies, working with multiple funding sources, including contracts with state health departments.)

In the context of increasing responsibility for public sponsorship of perinatal services, Medicaid has enabled reimbursement for the work of maternity care coordinators. These staff members, usually prepared in public health nursing, act as case managers, working to link their clients to the full range of appropriate services such as transportation, WIC, AFDC, Food Stamps, and child care. Twenty-eight states have implemented such programs. Experience is still too limited for complete evaluations, but preliminary testimonials are consistently optimistic.

The present focus of effort for maternity care coordinators is the perinatal sequence; the service ordinarily terminates 60 days after birth of the infant. A compelling rationale for tracking and for facilitating service linkages urges the continuation of case coordination for infants and young children through the early years of life, hopefully until enrollment in school or a preschool program such as Head Start, when other means of oversight become available.

Medical care coordinators attached to public programs of preventive health care have the further potential for achieving the elusive ideal of comprehensive care for children when they require more complex services than the prevention programs provide. Attempts to combine all possible appropriate services within one service center, either public or private, is an unlikely prospect, considering the full range of social and medical services that children may require. Other resources are intermittently necessary for treatment of illness or injury and consistently necessary for children with chronic or handicapping conditions.

Orchestrating the full range of appropriate services exceeds the time and skills of many families. It is a service often rendered by private physicians, but seldom by emergency rooms, hospital dispensaries, or walk-in clinics that serve as the usual source of care for a large number of low-income children. For those children, enrollment in public programs of preventive care with staff to facilitate linkage with other providers as necessary offers the best prospect for care that is comprehensive and individualized. Experience in South Carolina with the EPSDT program (Liu, 1990) speaks to the success of medical care coordination that links Medicaid-eligible children with private physicians' care. Increasing Medicaid reimbursement rates without the work of a facilitator has not enjoyed similar success (National Governors' Association, 1990).

Community Child Care: Head Start celebrated its 25th birthday with a record of successful achievement for the children who were enrolled. Success is mitigated by the sad realization that the programs are sufficient for only about 20% of eligible children. Expansions have recently been authorized by Congress, but they are modest when measured against need. After a quarter of a century of success, Head Start deserves to be institutionalized into public school systems, extending their responsibility into younger age groups. Head Start's four-pronged emphasis—education, health care, social service, and parental involvement—represents linked and coordinated care that should be a consistently available model for U.S. preschool children. School systems, linked to health departments or community clinics for the health component, represent the best prospect for implementation.

High-Risk Tracking

The National Center for Clinical Infant Programs reports on 15 states that have implemented high-risk tracking programs in an effort to identify and follow infants who are felt to be at risk for poor health or delayed development (Berman, Biro, & Fenichel, 1989). Momentum for these endeavors is provided by Public Law 99-457, which requires each state to develop a system of early identification of children with special needs in order to implement mandates for early education of the handicapped. Tracking programs in some states are administered by health agencies and in others by the educational system.

Laudable as the endeavors are, they are troubled with problems of inadequate implementation. No program serves as a successful model that might be

Orchestrating the full range of appropriate services exceeds the time and skills of many families.

emulated by other states. The situation is reminiscent of experience in Europe 2 decades ago when children's risk registries were abandoned in favor of a commitment to implement "... careful observation of every child's developmental progress..." (Richards & Roberts, 1967, p. 711). Our study reinforces that view.

Recommendation: European experience suggests that successful tracking of high-risk children is best achieved—perhaps only achieved—in the context of universal systems of care that reach all children with routine screenings and that thereby enable the consistent early identification of children at risk of health or developmental problems.

The Community Infrastructure

While not wishing to diminish an emphasis on comprehensive care, we believe it can best be realized in the context of the consistent and uniform availability of basic preventive health services for all women of childbearing age, their infants, children, and families. The consistency of such care depends on the collaboration of many agencies and providers, both public and private. A strengthened community infrastructure of public health agencies is required, at the very least, for tracking and assuring participation of all children.

Broad systems of health care, especially in the public domain, are easily demeaned for their many failings. Small wonder that they have become vulnerable targets for criticism, as their underfunding and political neglect have been severe. Official public health agencies, whether they function by contract with private nonprofit community agencies as in New England, or by direct-service systems as in the Sunbelt, are responsible for some of our best successes in providing for children's health. The health components of Head Start, WIC, and EPSDT at their best all owe their implementation in large measure to health departments, working either directly or through contracted agencies. Many successful demonstrations of preventive care owe elements of their comprehensive nature to the participation of health departments.

A leap of faith is required to envision a comprehensive program of child health that assures participation of all children in well-child and preventive care, closely linked to the full range of medical, social, and educational services as needed. The two institutions which most nearly approach involvement with all children are health departments and schools. They represent a potential sequence of responsibility for tracking children and linking them to appropriate services. Some policy propositions concerning expanded roles for these institutions are best formulated as queries.

How can health departments or their contractors be strengthened in order to monitor participation of all young children in appropriate health services?

That mission does not require that all departments render direct services beyond facilitating the work of other provider systems, including the private domain and community health centers under federal sponsorship. Birth registrations might be accompanied by certification designating the provider with responsibility for continuing care of the infant. Both the designated provider and the official public health agency would be advised of that responsibility and the public agency would be obliged to confirm compliance with it. When compliance fails, the health agency would assume responsibility for making alternative arrangements. Those arrangements, according to local circumstances, might oblige some departments to expand clinics for well-child care and oblige others to provide a full range of comprehensive health care, or to facilitate other private or public initiatives.

Some communities are striving to fulfill such a mission. The St. Louis city and county health departments, along with four federally sponsored community clinics, are collaborating in an effort to implement the maternal and child health Model Standards for Community Preventive Health Services. Because of previous long delays in birth notifications, copies of birth certificates are now being faxed directly to the appropriate health department or clinic for follow-up.

A national program of preventive health care presumes availability of an expanded corps of midlevel professional health workers: nurse practitioners, outreach workers, and health care coordinators. University-based educational programs fail to prepare such people in sufficient numbers to meet the need.

In fact, the required skills are not well represented in the curricula and faculties of medicine, nursing, or public health. Their endeavors increasingly focus on more complex technical, administrative, policy, and evaluative aspects of health care. Many graduates of such programs fill important roles as planners, supervisors, or trainers in community health service settings. These roles are essential but insufficient unless supplemented with inservice training programs that are conducted by community clinics.

Some of the early training programs for nurse practitioners and other mid-level providers were conducted within community service agencies. Current reports on expanded use of health care coordinators and outreach workers feature inservice training, often for nurses or social workers. The biggest obstacles to recruitment for these positions appear to be noncompetitive salaries and constrained agency budgets. No policy initiatives appear promising in the absence of increased funding for the human service infrastructure.

How can school systems merge attempts to implement high-risk tracking with a responsibility to institutionalize Head Start?

If the age of educational responsibilities for children were lowered, school supervision might blend with the tracking and service roles of health departments, thus closing the gap in the societal oversight of young children. Case managers attached to both institutions could facilitate linkages with the complex support agencies that are required by some children with special needs, and by many more children intermittently.

How can this vision, or any other that addresses the neglect of young children, be protected against future erosion once implemented?

The problem with money earmarked for children, as with political will, is that it fluctuates over time. Other priorities take precedence in the dynamics of social policy negotiated among competing interest groups. Nowhere is that fluctuation more apparent than in publicly sponsored preventive health care for children. Public programs are well documented both for quality and economic effectiveness—when they are adequately financed. Support tends to leak away early as trade-offs are made at times of economic retrenchment. Some durable measures are required to protect against these trade-offs.

In an effort to maintain support for children's programs through fluctuations in political ideology and in public finance, Sugarman has proposed a Children's Trust Fund (Sugarman, 1988). It is a strategy of proven effectiveness for the elderly and even for the federal highway system. Sugarman suggests that a small additional employer and employee payroll withholding be administered through existing Social Security mechanisms, sufficient to generate \$20 billion per annum, earmarked for support of children's health services.

Other sources of financing a children's trust fund should be considered. A set-aside of a portion of Medicaid funds and a surcharge on private health insurance premiums could channel money into the trust fund. In that way both public and private health insurance could be used not only to finance child health services, but to assure that the community infrastructure of services is actually available where needed.

A common failure to establish linkages among human support agencies is the absence of those agencies in the locales and for the populations of greatest need. Linkages among agencies that reasonably should collaborate are weakest when their priorities are not explicit and synchronized. Preventive health care, which suffers a very low priority, fails most when it is not rendered. These are matters that are correctable as issues of public policy. The issue is worthy of a major national effort. Lesser causes have been touted for protection of the national security.

The political feasibility of expanded preventive health care for children deserves attention. Encouraging signs appear. The Health Objectives for the Nation for the Year 2000 feature many goals targeted for children. A preventive emphasis is conspicuous. The Omnibus Budget Reconciliation Act of 1989 attaches potentially powerful instruments of implementation to the national health objectives. The Act provides that Medicaid and Title V of the Social Security Act (the Maternal and Child Health Block Grant) oblige the states to report on and plan to extend preventive services such as EPSDT to eligible but unserved populations. By that device the national health objectives become an instrument for influencing the allocation of resources and strengthening state and county systems that can contribute to meeting specific and measurable national objectives.

A national conscience on behalf of children is stirring, and the political will begins to bend in their direction.



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Appendix A: Survey Instrument

A. Demography

1. Please list important minority populations living in your country (distinct ethnic, cultural, and regional groups, etc.). Include if possible children of foreign-born parents and racial minorities.

Group 1 _____

Group 2 _____

Group 3 _____

Group 4 _____

Group 5 _____

Please give or estimate numbers of children living in your country, including subtotals for important minority populations.

Age	Total Population	Minority Group ¹	Minority Group ²	Minority Group ³
Birth to 28 days				
>28 days & ≤1 year				
>1 year & ≤5 years				
>5 years & ≤12 years				

B. Organization of Preventive Services

1. Is there a separate provider system devoted to preventive care for children, or is preventive care delivered by the same system that renders curative services? (Please check the most appropriate response.)

- ☐ Virtually all preventive services are rendered by a provider system that is entirely separate from the curative care system.
- ☐ Most preventive care is delivered by a separate preventive care system, but a few preventive services are also rendered by the curative care provider system.
- ☐ There is a separate preventive care system, but most preventive care is rendered by the curative care provider system.
- ☐ A single provider system renders virtually all preventive services in addition to curative care.

2. Does the provider system that renders preventive care to children care for other age groups as well?

3. Does the same provider system deliver preventive care to all economic strata and all population subgroups? Are there important regional differences?

If there is more than one system of delivery, please describe briefly how they differ and the populations served by each.

4. How is preventive care for children financed? Please give or estimate the proportion of preventive care paid for by each available source. (Enter percentages in each cell of the following table.)

<i>Payment Source</i>	<i>Type of Preventive Care</i>		
	<i>Screening</i>	<i>Well-Child Visits</i>	<i>Immunization</i>
Government—direct payment			
Social insurance			
Private insurance companies			
Private individuals			
Other (please explain)			

5. How is physician participation structured—what proportion of physicians who render preventive care fall into the following categories?

<i>Provider Status</i>	<i>% of Physicians Rendering Preventive Care</i>
Office-based private practitioners	
Office-based private practitioners under government contract	
Clinic physicians on government salary, full-time	
Clinic physicians on government salary, part-time	

6. May physicians in private practice choose whether or not to see publicly subsidized patients? If so, what percentage refuse?

7. Are parents required to see that their children receive preventive services? Please identify the nature of requirements:

<i>Nature of Requirements</i>	<i>Type of Preventive Care</i>		
	<i>Screening</i>	<i>Well-Child Visits</i>	<i>Immunization</i>
Required by law			
Required for admission to preschool			
Required for admission to school			
Required to receive public support (please explain)			
Other (please explain)			

8. How are parents otherwise reminded to see that each child receives preventive care? Indicate when possible the percentage of children reached by each method.

<i>Nature of Reminder</i>	<i>Type of Preventive Care</i>		
	<i>Screening</i>	<i>Well-Child Visits</i>	<i>Immunization</i>
Letters			
Phone calls			
Home visits			
Other (please explain)			

Describe any other efforts designed to increase participation (media campaigns, outreach by health workers, etc.).

9. Are parents given a record of each child's growth and immunizations? If so, please attach a sample record.

10. Are participation rates lower among certain population subgroups? (Please check any that apply.)

Group 1 (From question A-1)

Group 2 (From question A-1)

Group 3 (From question A-1)

Group 4 (From question A-1)

Group 5 (From question A-1)

Children of foreign parents (If not one of the above groups)

Children in low-income families

What specific efforts are made to increase participation among these groups?

C. Screening

1. What screening tests are routine, and what proportion of children are tested? (Please enter the percentage of children tested in each cell.)

Test	Age			
	Birth to 28 days	>28 days & ≤ 1 yr	> 1 yr & ≤ 5 yrs	> 5 yrs & ≤ 12 yrs
Hemoglobin or hematocrit				
Bilirubin				
Test for syphilis				
Thyroxine or TSH				
Test for PKU				
Test for galactosemia				
Test for homocystinuria				
Test for cystic fibrosis				
Test for lead toxicity				
Urinalysis				
Test of visual acuity				
Test of impaired hearing				
Tuberculin sensitivity				
Other				

2. Must parents pay any of the cost of these routine tests?

If so, is payment waived for those below a certain level of income?

3. Describe how the follow-up of abnormal test results is ensured. Who is responsible?

4. Are other laboratory tests performed on high-risk subgroups of children? If so, please list these tests and on whom they are performed:

<i>Test</i>	<i>Group Tested</i>

5. What screening test for developmental delay is generally administered, and what criteria motivate testing? What proportion of children are screened?

6. Is a registry maintained of children at risk for developmental or health problems? If so, please attach a description of this program, including criteria for inclusion and recommended follow-up of these children.

7. Is screening for dental disease routine? If so, where is this done and by whom? How are children with dental problems followed up?

D. Well-Child Care, Neonatal Period

1. When are newborns first given a physical examination, who performs the exam, and of what does the exam consist?

2. Are prophylactic eyedrops routinely used?
When?
What type?
What proportion of newborns are treated?

3. Is parenteral vitamin K routinely given?
When?
In what dosage?
What proportion of newborns receive it?

4. Are children born in hospitals re-examined before discharge? If so, when and by whom?

5. Are provisions made for testing and examining infants born out of hospital? If so, how is this done?

6. What proportion of newborns are visited at home in the first month postpartum? What are the criteria for visitation, who visits, and what is the content of the visit?

7. What linkages exist between the preventive care system and social support programs (housing, food and income subsidies, etc.)?

E. Well-Child Care, Post-Neonatal Period

1. Following discharge from hospital, how many routine office or clinic visits are recommended for well children, and what proportion of children make the recommended number of visits? (Please complete the following table.)

	Age			
	Birth to 28 days	>28 days & ≤1 yr	>1 yr & ≤5 yrs	>5 yrs & ≤12 yrs
Recommended number of visits				
Actual mean number of visits				
% of children who make the recommended number of well-child visits				
% of children who make an intermediate number of well-child visits				
% of children who make few or no well-child visits				

2. Where do these visits take place? Please give or estimate percentages for each age group at each of the following sites:

Location	Age			
	Birth to 28 days	>28 days & ≤1 yr	>1 yr & ≤5 yrs	>5 yrs & ≤12 yrs
Home				
Physicians' private offices				
Public health centers				
Hospital outpatient departments				
Schools				
Other				

3. If preventive services are rendered at school, please describe how this is done. Are there full-time clinics located in some schools, do health care personnel visit only occasionally for mass screening, etc.? At what age does such care begin?

4. Assuming that no abnormalities are evident, what type of health care provider conducts well-child visits? Please give or estimate the proportion of well children seen by each of the following (if possible, enter percentage in each cell):

Provider	Age			
	Birth to 28 days	>28 days & ≤1 yr	>1 yr & ≤5 yrs	>5 yrs & ≤12 yrs
Pediatrician				
General physician				
Nurse				
Health educator				
Other				

5. How many complete physical examinations are recommended from birth to 28 days of age?
From 29 days to 1 year of age?
From 1 to 4 years of age?
From 4 to 11 years of age?

6. What types of health care provider perform these exams? (Check all that apply.)

Provider	Age			
	Birth to 28 days	>28 days & ≤1 yr	>1 yr & ≤5 yrs	>5 yrs & ≤12 yrs
Obstetrician				
Pediatrician				
General MD				
Nurse				
Other (specify)				

7. Are dental sealants routinely applied? What proportion of children receive this treatment?

8. Are attempts made to identify high-risk families (i.e. those with marginal social support or questionable ability to cope with a new child)? If so, how is this done?

Are children in such families followed differently? If so, how?

9. Do routine well-child visits include parent counseling in anticipation of common problems? If so, are parents approached in groups or individually?

10. Is there a formal strategy to educate parents about childrearing?

In what setting and from whom do parents learn about subjects such as infant nutrition, child development, sleep, discipline, and safety? Please rate the importance of each cell in the following table by entering a number from 1 to 5:

- 1 = Not applicable or nonexistent
- 2 = Not a significant method of parent education
- 3 = Of minor significance in educating parents
- 4 = Important to parent education
- 5 = A very important means of educating parents

Location	Source of Information						
	Grand- parents	Physician or nurse	School teacher	Child develop- ment specialist	Popular literature on child- rearing	Mass media	Other
Home							
Public school							
Adult classes							
Physician's office							
Public clinic							
Other (explain)							

11. How are such educational efforts financed and sponsored?

12. If written guidelines or standards for preventive care are available to providers, please enclose a copy. If there is a standard record for parents to keep for each child, please provide a copy of this as well.

F. Psychosocial Supportive Services and Benefits

1. Is subsidized child day care available for single parents? For families in which both parents work? Please describe available care in detail, addressing the cost to parents, certification requirements, ongoing review process, and how sick children are provided for.

2. Is paid parental work leave allowed in case of an ill child? If so, how is this policy governed (by statute, employer discretion, etc.), and what restrictions apply?

3. For parents with marginal or no employment, what financial and other assistance is available, and what proportion of those in need receive assistance?

Assistance Program	Proportion of Need Met (%)
Low-cost, subsidized housing	
Nutritional supplements for those at dietary risk	
Income supplements for poor families	
Other	

4. How are eligible families informed of available assistance programs? What are the chief barriers to participation?

5. Are homes of high-risk families investigated by social workers, child advocates, or health visitors? How are the interests of children protected by statute?

6. Are meals for school children government subsidized? Please describe any other programs that attempt to assist children directly.

G. Accident Prevention

1. What are the major causes of accidental injury and death among children in your country? Please attach statistics if available, including analysis by age group.

2. What laws have been enacted to reduce the incidence and severity of childhood injury?

<i>Subject of Law</i>	<i>Year Enacted</i>	<i>Requirements</i>
Safety restraints in automobiles		
Protective helmets for cyclists		
Smoke detectors		
Bars or screens on windows of upper-floor dwellings		
Childproof fencing around swimming pools		
Manufacturer labeling of poisonous household products		
Childproof containers for certain products		
Safety standards for playground equipment and toys		
Other		

3. For subjects listed above that are not currently regulated by law, please identify those in common use for other reasons (industry self-regulation, public information campaigns, etc.). Did any formal policy or strategy for health promotion lead to this widespread use?

4. What speed limits are typical for highway and in-town driving? Have limits been lowered in the past 10 years?

5. Are there poison control emergency telephone lines in existence, either regionally or nationally? If so, how are they financed?

6. Is there a national strategy to educate parents about childhood injury prevention? What is the primary source of parent education (health care providers, schools, special classes for parents, mass media, etc.)?

7. What are the primary sources and locations of parent education about child injury prevention? (Please check.)

Location	Source				
	General practitioners	Pediatricians	Nurses	Health educators	Others
Hospital (postpartum)					
Office or clinic					
Home					
Special classes or group meetings					
Other					

8. What topics are routinely discussed with parents by the above providers? (Please check.)

Topic	Age			
	Birth to 28 days	> 28 days & ≤ 1 yr	> 1 yr & ≤ 5 yrs	> 5 yrs & ≤ 12 yrs

Avoiding falls

Scalding—hot water heater temperature

Choking—toy size, Heimlich maneuver

Proper car seat restraint device

Prevention of poisoning—safe storage, etc.

Electricity—cords, outlets, appliances

Fire—smoke detectors, escape plan, extinguisher

Water safety

Other

9. What topics are discussed directly with children? Is this done primarily in schools, or in other settings? Who educates children about safety?

H. Immunization

1. Against which diseases are children immunized, and at what ages are they immunized? Please complete the following table.

<i>Disease</i>	<i>Age</i>
Polio	
Diphtheria	
Pertussis	
Tetanus	
Measles	
Mumps	
Rubella	
Tuberculosis (BCG)	
Other	

2. What proportion of all children are fully immunized by 2 years of age, by entry into preschool (if applicable), and by the time they begin school? Please complete the following table.

<i>Disease</i>	<i>Immunization rate at 2 years of age</i>	<i>Immunization rate at entry into preschool</i>	<i>Immunization rate at entry into school</i>
Polio			
Diphtheria			
Pertussis			
Tetanus			
Measles			
Mumps			
Rubella			
Tuberculosis (BCG)			
Other			

What percentage of children attend preschool, and at what age do they begin?

At what age do children begin school?

3. What are the reasons for children not completing the recommended immunization schedule? Please rate the following and add any others of significance.

	<i>Not a problem</i>	<i>Mild problem</i>	<i>Serious problem</i>
Lack of transportation to immunization site			
Lack of knowledge about availability of vaccines			
Lack of knowledge about benefits of vaccination			
Concern about the cost of vaccination			
Religious concerns			
Fear of untoward reaction or side effects of vaccine			
Other			

4. Where are children immunized, and who gives the immunizations? Please complete the following table.

<i>Location</i>	<i>Provider</i>			
	<i>Physician</i>	<i>Nurse</i>	<i>Health worker</i>	<i>Other</i>
Hospital				
Private office				
Health center or public clinic				
Preschool or school				
Home				
Other				

5. Approximately what percentage of children are immunized at each type of location?

<i>Location</i>	<i>% of all children immunized</i>
Hospital	
Private office or clinic	
Health center or public clinic	
Preschool or school	
Home	
Other	

6. For each of the following diseases, please give or estimate the annual number of cases among children (from birth to age 11, if possible; if not, specify age range), the rate of incidence, and the percentage of the population at risk who have been immunized. For the purpose of calculating incidence, assume all reported cases are new cases.

<i>Disease</i>	<i>Reported cases</i>	<i>Rate of incidence</i>	<i>Immunization rate</i>
Polio			
Diphtheria			
Pertussis			
Tetanus			
Measles			
Mumps			
Rubella			
Tuberculosis			

I. Nutrition

1. What percentage of women breastfeed?

<i>Time</i>	<i>Percent</i>
Immediately postpartum	
One month postpartum	
2-3 months postpartum	
4-6 months postpartum	

2. Where and from whom do parents receive information about infant and child nutrition? (Please check all that apply.)

<i>Location</i>	<i>Provider</i>				
	<i>MD</i>	<i>Nurse</i>	<i>Health educator</i>	<i>Teacher</i>	<i>Other</i>
Hospital					
Private office or clinic					
Health center or public clinic					
School					
Home					
Other (explain)					

3. Is there a formal educational program to teach parents infant and child nutrition?

If so, what topics are covered? (Please check.)

Breastfeeding

Introduction of solid foods

Dental hygiene

Optimal balance of diet

Sugar intake

Fat intake

Exercise

Other (explain)

4. What is the prevalence of stunted growth among children? (Moderate stunting is present if height for age is below the 5th percentile, and severe stunting exists when height for age is more than 2 standard deviations below the mean.)

Age	Prevalence of moderate stunting	Prevalence of severe stunting
-----	---------------------------------	-------------------------------

<3 months

3-5 months

6-11 months

1 year

2-4 years

6-11 years

5. What is the prevalence of wasting among children? (Moderate wasting is present if either weight for height or weight for age is below the 5th percentile, and severe wasting exists when either weight for height or weight for age is more than 2 standard deviations below the mean.)

Age	Prevalence of moderate wasting	Prevalence of severe wasting
-----	--------------------------------	------------------------------

<3 months

3-5 months

6-11 months

1 year

2-4 years

6-11 years

6. What is the prevalence of obesity among children? (Moderate obesity is present if either weight for height or weight for age is above the 95th percentile, and severe obesity exists when either weight for height or weight for age is more than 2 standard deviations above the mean.)

Age	Prevalence of moderate obesity	Prevalence of severe obesity
-----	--------------------------------	------------------------------

<3 months

3-5 months

6-11 months

1 year

2-4 years

6-11 years

7. What are the criteria for diagnosing iron deficiency among children?

What is the prevalence of iron deficiency anemia among children?

<i>Age</i>	<i>Prevalence of iron deficiency anemia</i>
< 3 months	
3-5 months	
6-11 months	
1 year	
2-4 years	
6-11 years	

8. How common are dental caries among children? (Please complete the following table.)

<i>Age</i>	<i>Prevalence of dental caries</i>
< 3 months	
3-5 months	
6-11 months	
1 year	
2-4 years	
6-11 years	

9. Is the fluoride added to the water supply? What proportion of the population drinks fluoridated water?

J. Child Abuse and Neglect

1. Is abuse and neglect of children a recognized problem? (Please complete the following table.)

<i>Measure</i>	<i>Frequency</i>
Cases reported annually	
Estimated prevalence	

2. Are suspected cases removed from their homes pending investigation?

3. Are confirmed cases reassigned to foster homes?



Appendix B: Related Tables and Figures

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Table B-20.	Number of Sick Days, U.S. 1962-63, 1970, 1980

Figures

Figure B-1.	Low-Income Persons: Children and Elderly: U.S. 1966-86
Figure B-2.	Prevalence of Activity Limitations for Children Younger than 17 Years of Age

TABLE B-1

Selected Characteristics of the U.S. and Study Countries, ca. 1986

Country	Population (1,000s)	Birth Rate per 1,000	% Under Age 12 ^a	Area (mi ²) ^a	Density (Persons/mi ²) ^a	% Urban
U.S.	241,078	15.6	17.2	3,539,289	68	73.9
Belgium	9,859	11.9	14.7	11,799	837	96.3
Denmark	5,129 ^b	10.9	13.6	16,633	308	85.1
France	55,278	14.1	16.3	210,040	263	73.4
Germany (FRG)	61,141	10.4	11.7	95,075	643	85.5
Ireland	3,541	16.6 ^c	22.9	27,137	130	57.0
Netherlands	14,715 ^b	12.7 ^c	14.6	16,464	894	88.4
Norway	4,197	12.5	14.9	125,057	34	72.8
Spain	38,996 ^b	11.2	16.6	195,988	199	75.8
Switzerland	6,567 ^c	11.7	12.4	15,941	412	58.2
U.K. ^d	56,763	13.4	15.1	92,222	602	91.7

a. Figures extrapolated from data for other age groups (0-4, 5-9, 10-14) for all but Ireland, Netherlands, Norway, and Switzerland.

b. 1988.

c. 1987.

d. Includes Scotland and Northern Ireland.

Sources: Survey responses; Council of Europe, 1983; NCHS, 1985-88.

TABLE B-2

Ethnic Composition

Country	% Minorities	Significant Minorities
Belgium	9 ^a	Italian, North African
Denmark	2	Turk, Asian
France	11 ^b	Algerian, Moroccan
Germany (FRG)	8 ^a	Turk, Italian
Ireland	7 ^c	Gypsy
Netherlands	6	Turk, Moroccan
Norway	3 ^a	Lapp, Pakistani
Spain	1	Basque, Gypsy
Switzerland	15	Italian
U.K.	7	Indian, Pakistani

a. Percent foreign citizenship among total population.

b. Percent of all births that were to foreign women (1985). This proportion is equal to the percentage of all children who have foreign parents in the Netherlands, but the relationship may be different in France.

c. Percent of total population born abroad, 1981 census.

Sources: Survey responses; Council of Europe, 1983.

TABLE B-3

Health Care Spending in the U.S. and Study Countries, 1986, in U.S. Dollars

Country	GNP per Capita ^a	Health Expenditure per Capita	% of GNP Spent on Health	Public Sector Health Expenditure (% of Total)
U.S.	17,400	1,926	11.1	40.8
Belgium	11,600	826	7.1	76.9
Denmark	13,100	800	6.1	83.9
France	12,200	1,039	8.5	79.2
Germany (FRG)	12,700	1,031	8.1	78.1
Ireland	6,900	549	7.9	87.6
Netherlands	11,900	984	8.3	78.7
Norway	15,000	1,021	6.8	97.3
Spain	8,100	486	6.0	71.5
Switzerland	15,200	1,217	8.0	67.7
U.K. ^b	11,500	711	6.2	86.2

a. Calculated from data in other columns.

b. Includes Scotland and Northern Ireland.

Source: Schieber & Poullier, 1988.

TABLE B-4
 Infant Injury Mortality, 1983-86
 All External Causes

AGE 0-1

Country	Deaths Per 100,000 Live Births		
	Males	Females	Total
U.S.			
Total	33.4	29.5	31.5
White (& Other non-Black)	27.0	24.4	25.7
Belgium ^a	33.9	34.8	34.3
Denmark	13.6	15.5	14.5
France	54.3	38.3	46.5
Germany (FRG)	49.2	38.3	43.9
Ireland	9.4	19.8	14.4
Netherlands	25.6	18.2	22.0
Norway	10.3	1.4	5.9
Spain ^b	37.1	27.0	32.2
Switzerland	24.6	11.0	18.0
England & Wales	23.1	16.6	19.9

a. 1983-84 and 1986.

b. 1983-85.

Sources: NCHS, 1989a; WHO, 1989.

TABLE B-5

Injury Deaths per 100,000 Among Children 1984-86 by Age Group, Sex, Cause, and Race (U.S. only)

	AGE 1-4		AGE 5-9		AGE 10-14		AGE 15-19		AGES 1-19		
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Total
Motor Vehicle Injuries											
U.S.											
Total	8.0	6.0	7.7	4.7	9.4	5.2	49.6	20.6	19.8	9.5	14.8
Black	10.1	6.5	10.0	5.7	8.0	3.3	22.9	7.4	13.0	5.7	9.4
White & Other	7.6	5.9	7.3	4.5	9.7	5.6	54.2	22.9	21.1	10.2	15.8
Belgium ^a	6.4	3.9	10.1	4.9	10.2	6.1	46.0	14.6	20.1	7.9	14.1
Denmark	4.6	6.4	6.4	3.7	9.2	6.8	40.6	11.5	17.4	7.4	12.5
France	5.9	4.0	6.2	4.1	6.6	4.1	37.0	14.3	15.0	7.0	11.1
Germany (FRG)	4.8	3.9	7.0	5.4	5.6	3.9	43.1	14.5	19.3	8.0	13.8
Ireland	8.7	6.9	8.1	3.7	5.9	2.7	30.8	11.1	13.4	6.0	9.8
Netherlands	2.4	1.9	5.0	1.6	6.6	4.3	22.8	8.4	10.6	4.6	7.7
Norway	3.2	2.7	7.9	3.1	6.7	3.7	41.6	13.1	16.8	6.2	11.6
Spain ^b	5.2	4.2	5.5	3.3	5.4	3.2	25.5	8.5	11.0	4.9	8.0
Switzerland	7.1	4.4	7.3	3.6	9.2	3.2	43.5	12.0	19.1	6.3	12.9
England & Wales	3.4	2.5	5.6	3.8	7.2	3.5	29.8	8.2	13.1	4.8	9.1
Accidental Poisoning											
U.S.											
Total	0.6	0.4	0.1	0.1	0.3	0.1	1.4	0.7	0.6	0.3	0.5
Black	1.6	1.0	0.1	0.2	0.1	0.1	0.7	0.6	0.6	0.4	0.5
White & Other	0.4	0.3	0.1	0.1	0.3	0.1	1.5	0.7	0.6	0.3	0.5
Belgium ^a	0.4	0.7	0.3	0.1	0.7	0.2	2.0	0.9	0.9	0.5	0.7
Denmark	0.0	0.3	0.2	0.0	0.0	0.2	0.8	0.9	0.3	0.4	0.3
France	0.5	0.4	0.2	0.3	0.2	0.1	0.3	0.2	0.3	0.2	0.3
Germany (FRG)	0.2	0.1	0.2	0.0	0.1	0.1	0.2	0.1	0.2	0.1	0.1
Ireland	0.0	0.3	0.2	0.0	0.6	0.0	0.8	0.8	0.4	0.3	0.3
Netherlands	0.2	0.1	0.1	0.1	0.1	0.1	0.5	0.4	0.3	0.2	0.2
Norway	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.1
Spain ^b	0.9	0.5	0.2	0.1	0.3	0.2	0.8	0.2	0.5	0.2	0.4
Switzerland	0.7	0.5	0.2	0.0	0.3	0.3	1.3	1.4	0.7	0.6	0.6
England & Wales	0.3	0.2	0.1	0.0	0.4	0.3	1.4	0.7	0.6	0.4	0.5
Falls											
U.S.											
Total	0.8	0.4	0.2	0.1	0.4	0.1	1.3	0.2	0.7	0.2	0.4
Black	1.4	0.6	0.3	0.1	0.3	0.1	0.6	0.1	0.6	0.2	0.4
White & Other	0.6	0.4	0.2	0.1	0.4	0.1	1.4	0.2	0.7	0.2	0.4
Belgium ^a	1.8	1.1	0.2	0.4	0.5	0.1	1.2	0.6	0.9	0.5	0.7
Denmark	0.9	0.0	0.6	0.2	0.2	0.0	0.5	0.2	0.5	0.1	0.3
France	0.9	0.8	0.4	0.2	0.4	0.1	1.4	0.5	0.8	0.4	0.6
Germany (FRG)	1.0	0.7	0.6	0.2	0.3	0.1	0.9	0.3	0.7	0.3	0.5
Ireland	0.5	0.3	0.2	0.2	0.7	0.0	2.7	0.2	1.0	0.2	0.6
Netherlands	0.6	0.4	0.2	0.4	0.4	0.2	0.4	0.0	0.4	0.2	0.3
Norway	1.0	0.3	0.5	0.3	0.0	0.0	1.6	0.4	0.8	0.2	0.5
Spain ^b	1.6	0.9	0.8	0.3	0.8	0.3	2.4	0.6	1.4	0.5	1.0
Switzerland	1.1	0.9	0.2	0.6	1.1	0.3	3.3	0.3	1.6	0.5	1.0
England & Wales	0.9	0.5	0.5	0.1	0.7	0.1	1.0	0.1	0.8	0.2	0.5

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	AGE 1-4		AGE 5-9		AGE 10-14		AGE 15-19		AGES 1-19		
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Total
Fire and Flames											
U.S.											
Total	4.9	3.8	2.0	1.5	1.0	0.8	1.0	0.6	2.1	1.6	1.8
Black	11.7	10.6	5.2	4.2	2.0	1.6	1.3	1.2	4.7	4.0	4.4
White & Other	3.7	2.6	1.5	1.1	0.8	0.6	0.9	0.5	1.6	1.1	1.4
Belgium ^a	2.3	0.9	0.5	0.3	0.2	0.2	0.4	0.0	0.7	0.3	0.5
Denmark	1.8	0.6	0.0	0.2	0.4	0.2	0.8	0.0	0.7	0.2	0.4
France	1.5	1.1	0.4	0.5	0.2	0.2	0.4	0.2	0.5	0.5	0.5
Germany (FRG)	1.8	1.2	0.4	0.3	0.2	0.1	0.4	0.2	0.6	0.4	0.5
Ireland	3.9	2.0	2.2	0.8	0.7	1.4	0.6	0.0	1.7	1.0	1.4
Netherlands	0.4	0.3	0.4	0.3	0.1	0.1	0.2	0.1	0.2	0.2	0.2
Norway	3.2	2.7	1.2	0.8	0.4	0.0	1.6	0.0	1.5	0.7	1.1
Spain ^b	1.1	0.7	0.2	0.1	0.2	0.1	0.5	0.2	0.4	0.2	0.3
Switzerland	0.4	0.7	0.2	0.2	0.2	0.0	0.0	0.0	0.2	0.2	0.2
England & Wales	2.8	1.8	0.8	0.4	0.4	0.2	0.3	0.4	0.9	0.6	0.8
Drowning											
U.S.											
Total	5.4	2.9	2.3	0.8	2.6	0.6	5.4	0.6	3.9	1.1	2.6
Black	3.0	1.9	4.9	1.8	7.5	1.7	9.3	0.7	6.4	1.5	3.9
White & Other	5.8	3.1	1.9	0.6	1.7	0.4	4.7	0.5	3.5	1.1	2.3
Belgium ^a	4.3	1.7	3.3	0.4	1.5	0.7	2.0	0.8	2.6	0.9	1.8
Denmark	1.8	0.6	0.8	0.2	0.4	0.2	0.7	0.0	0.8	0.2	0.5
France	3.3	1.7	1.5	0.6	0.9	0.3	1.4	0.4	1.7	0.7	1.2
Germany (FRG)	4.2	2.3	2.1	1.0	0.5	0.3	0.9	0.0	1.7	0.7	1.2
Ireland	4.6	0.0	1.7	0.0	2.8	0.0	2.2	0.6	2.7	0.2	1.5
Netherlands	6.3	2.4	2.3	0.4	0.8	0.1	1.0	0.1	2.2	0.6	1.4
Norway	3.8	3.0	3.2	1.5	1.5	0.0	2.1	0.2	2.5	1.0	1.8
Spain ^b	4.0	2.0	2.5	0.6	2.3	0.5	2.9	0.5	2.8	0.8	1.8
Switzerland	4.4	3.9	0.9	0.4	1.4	0.0	1.3	0.0	1.8	0.8	1.3
England & Wales	1.9	0.6	0.9	0.1	0.6	0.2	1.0	0.1	1.1	0.2	0.7
Suicide											
U.S.											
Total	—	—	—	—	2.2	0.7	15.5	3.7	4.9	1.2	3.1
Black	—	—	—	—	1.3	0.4	7.0	1.8	2.3	0.6	1.4
White & Other	—	—	—	—	2.3	0.8	17.0	4.0	5.3	1.3	3.4
Belgium ^a	—	—	—	—	1.5	0.4	8.9	2.8	3.0	0.9	2.0
Denmark	—	—	—	—	1.1	0.2	11.4	2.6	3.8	0.9	2.4
France	—	—	—	—	1.3	0.3	8.8	2.8	2.9	0.9	1.9
Germany (FRG)	—	—	—	—	2.0	0.9	13.0	3.9	5.2	1.6	3.5
Ireland	—	—	—	—	0.6	0.2	7.3	1.4	2.0	0.4	1.2
Netherlands	—	—	—	—	0.8	0.3	4.6	1.4	1.7	0.5	1.1
Norway	—	—	—	—	2.7	0.4	15.6	3.3	5.4	1.1	3.3
Spain ^b	—	—	—	—	0.6	0.2	3.7	1.1	1.2	0.4	0.8
Switzerland	—	—	—	—	2.2	0.3	17.0	4.3	5.9	1.4	3.7
England & Wales	—	—	—	—	0.1	0.1	4.3	1.1	1.4	0.4	0.9

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	AGE 1-4		AGE 5-9		AGE 10-14		AGE 15-19		AGES 1-19		Total
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	
Homicide											
U.S.											
Total	2.6	2.3	0.9	0.9	1.7	1.2	13.5	4.3	5.0	2.3	3.7
Black	7.0	6.6	2.2	2.6	4.2	2.3	45.7	10.9	15.6	5.7	10.7
White & Other	1.9	1.6	0.6	0.6	1.3	1.1	7.9	3.1	3.1	1.6	2.4
Belgium ^a	1.2	1.3	0.5	1.1	0.6	0.4	1.1	1.2	0.9	1.0	0.9
Denmark	0.6	2.6	1.2	0.9	0.4	0.8	4.8	0.5	2.0	1.0	1.5
France	0.5	0.7	0.4	0.4	0.3	0.3	0.8	0.6	0.5	0.5	0.5
Germany (FRG)	0.9	0.9	0.6	0.7	0.4	0.4	0.8	1.4	0.7	0.9	0.8
Ireland	0.0	0.0	0.0	0.4	0.2	0.0	0.6	0.2	0.2	0.2	0.2
Netherlands	0.5	0.5	0.3	0.3	0.2	0.1	1.0	0.4	0.5	0.3	0.4
Norway	1.0	0.7	0.7	0.5	0.2	0.0	1.8	0.8	0.9	0.5	0.7
Spain ^b	0.2	0.1	0.1	0.1	0.2	0.1	1.2	0.4	0.4	0.2	0.3
Switzerland	1.1	2.1	1.6	1.1	0.6	0.5	0.4	1.1	0.9	1.1	1.0
England & Wales	0.8	0.8	0.4	0.3	0.3	0.2	0.8	0.4	0.6	0.4	0.5
All External Causes											
U.S.											
Total	27.0	18.8	15.9	9.3	22.7	9.9	97.1	32.4	42.6	18.0	30.5
Black	41.9	31.8	25.0	16.1	27.7	10.6	95.1	23.9	48.4	20.1	34.4
White & Other	24.4	16.5	14.3	8.0	21.8	9.8	97.5	33.9	41.6	17.6	29.8
Belgium ^a	20.2	13.1	16.4	8.6	17.5	8.7	66.5	22.2	32.3	13.5	23.2
Denmark	10.7	12.1	10.2	5.4	14.8	8.3	58.4	16.6	26.3	10.8	18.7
France	19.6	13.2	12.9	7.9	15.1	7.5	63.8	23.0	29.4	13.2	21.5
Germany (FRG)	17.7	12.4	13.4	8.8	11.9	6.7	65.4	22.1	32.6	13.7	23.3
Ireland	20.0	12.0	14.8	5.6	16.4	5.3	53.5	15.3	26.1	9.3	17.9
Netherlands	14.6	7.6	9.6	3.7	11.0	5.7	33.4	11.8	18.4	7.5	13.1
Norway	16.3	10.4	16.3	6.5	14.6	5.7	73.9	19.9	33.1	11.0	22.3
Spain ^b	17.7	11.8	12.8	6.0	13.6	5.8	49.2	14.5	24.0	9.4	16.9
Switzerland	18.2	15.6	12.9	6.9	18.7	7.3	76.8	23.0	35.5	13.7	24.9
England & Wales	12.8	8.5	9.4	5.5	12.6	5.5	46.3	13.3	22.3	8.5	15.6

a. 1983-84 and 1986.

b. 1983-85.

Sources: NCHS, 1985-1988; WHO, 1989.

TABLE B-6
Reported Pertussis and Measles Morbidity, 1980-86

Country	1980	1981	1982	1983	1984	1985	1986	Total Deaths per Million Population 1980-86 ^a
Pertussis Cases Reported per 100,000 Population								
United States	0.76	0.54	0.82	1.05	0.96	1.50	1.74	0.18
Denmark	9.70	8.52	2.60	3.68	6.59	3.58	2.22	0.59
France	0.02	0.01	0.03	0.02	0.01	—	—	0.49
Ireland	1.61	2.90	3.08	4.93	8.67	10.42	—	2.86
Netherlands	0.02	0.04	0.06	0.13	0.37	1.05	1.48	0.07
Norway	4.90	4.92	5.13	6.53	3.32	2.95	1.89	0.00
Spain	—	—	14.08	9.26	9.37	15.73	14.50	0.37 ^b
Switzerland	0.02	0.01	0.00	0.02	0.08	0.10	0.15	0.16
England & Wales	4.66	4.33	14.30	4.35	1.29	4.86	7.98	0.76
Measles Cases Reported per 100,000 Population								
United States	5.96	1.36	0.74	0.64	1.10	1.18	2.61	0.11
Denmark	55.14	69.61	30.59	65.00	41.45	25.79	45.87	1.76
France	0.23	0.21	0.15	0.16	0.18	—	—	2.82
Ireland	3.25	3.12	5.45	17.62	16.22	27.97	—	6.86
Netherlands	0.13	0.05	0.07	0.31	0.06	0.02	0.64	0.14
Norway	3.24	11.19	26.67	14.97	42.21	3.16	2.93	0.98
Spain	38.71	38.86	42.03	7.90	10.15	20.95	57.16 ^c	2.34 ^b
England & Wales	30.05	12.46	21.30	23.15	13.59	20.99	18.02	2.03

a. The total number of reported deaths from 1980-86 divided by the mean annual population during this interval.

b. 1980-85 totals.

c. 1985 population used as denominator.

Sources: Bytchenko, 1988; CDC, 1988; WHO, 1989.

TABLE B-7
Laboratory Screening of Newborns

Test	Country										U.S.
	Belgium	Denmark	France	Germany (FRG)	Ireland	Netherlands	Norway	Spain	Switzerland	England & Wales	
Hypothyroidism	X	X	X	X	X	X	X	X	X	X	X
Phenylketonuria	X	X	X	X	X	X	X	X	X	X	X
Galactosemia	X			X	X				X		X ^b
Homocystinuria	X				X				X		X ^b
Cystic fibrosis	X	X ^a									
Syphilis	X										
Hgb or Hct	X							X			
Coombs-positive hemolytic anemia	X										
Toxoplasmosis	X										
Bilirubin								X			
Maple Syrup Urine disease					X						X ^b

a. Frequently performed tests.

b. 35 of the United States test for galactosemia, 24 test for Maple Syrup Urine disease, and 22 test for homocystinuria. Some states test for biotinidase deficiency and sickle cell anemia.

Source: Survey responses.

TABLE B-8
Recommended Well-Child Visits, 1 Month to 12 Years of Age

Country	Age		
	<1	1-5	5-11
Belgium	10	16	4
Denmark	3	5	7-8
France	7 ^a	7	—
Germany (FRG)	6	2	1
Ireland	4 ^b	5 ^b	4-5
Netherlands	8	5	3
Norway	9	3	1
Switzerland	4-5	3	3
U.K.	5	3	0
U.S.	6	5	4

a. Three compulsory visits (at 8 days, 9 months, and 2 years) are 100% reimbursed; others, 70%.

b. During the first year, three visits to nurse and one (at 6 months) to GP or Area Medical Officer; during years 2-5, three visits to nurse and two (at 12 and 24 months) to GP or AMO. Figures include visits for immunizations, but exclude visits in first month of life.

Data from Spain are not available.

Sources: American Academy of Pediatrics, 1985; Survey responses.

TABLE B-9
Participation in Well-Child Care, 1 Month to 12 Years of Age

Country	Percentage of Children Attending Recommended Visits by Age		
	<1	1-5	5-11
Belgium	95	*	—
Denmark	91-94	83-91	95
France	—	—	—
Germany (FRG)	—	—	—
Ireland	**	32	22
Netherlands	95	80	95
Norway	80-90	70-80	100
Switzerland	—	—	—
U.K.	95	70	—

* Gradually decreases to about 50-60%.

** Clinics staffed by Area Medical Officer, primarily located in towns of > 3,000 population, are estimated to be less well attended; 79% of eligible children comply with recommended schedule, vs. an estimated 95% of those cared for by GPs.

Data from Spain are not available.

Source: Survey responses.

TABLE B-10
Completed Immunization Rates for Preschool Children,
Most Recent Available Year

Country	Year	DTP ^{1,2}	Measles ⁴	Polio ^{2,3}
United States	1985	64.9	60.8	55.3
White		68.7	63.6	58.9
All other		48.7	48.8	40.1
Belgium ⁶	1987	95.0	90.0	99.0
Denmark	1987	94.0 ⁷	82.0	100.0
France ⁶	1986	97.0	55.0	97.0
Germany (FRG) ⁶	1987	95.0	50.0	95.0
Ireland	—	—	—	—
Netherlands	1987	96.9	92.8	96.9
Norway	1987	80.0	87.0	80.0
Spain	1986	88.0	83.0	80.0
Switzerland	1986	90-98	60-70	95-98
(Different cantons)				
England & Wales	1987	87.0 ⁸	76.0	87.0

1. Diphtheria-tetanus-pertussis.

2. Three doses or more.

3. U.S. rates are for children 1-4 years of age; European figures are for children under 3.

4. U.S. rates are for children 1-4 years of age; European figures are for children under 2.

5. U.S. rates are for children 1-4 years of age; European figures are for children 1-3 years of age.

6. Estimated.

7. Rate is for combined diphtheria, tetanus, and polio immunizations. Pertussis (coverage = 89.0%) and oral polio vaccines are given at separate visits; sequential immunization against polio by both injectable and oral vaccines is recommended.

8. Rate is for diphtheria and tetanus; rate for pertussis immunization is 73%.

Sources: Bytchenko, 1988; USPHS, 1989; National Statistics Offices (Denmark, Netherlands, England and Wales).

TABLE B-11
Immunization of U.S. Children 1-4 Years of Age
by Race and Central City, 1983-85

Data Source	Total	White	Nonwhite	Central City
<i>Recall</i>				
DPT, 3 doses				
1983	65.7	70.1	47.7	55.4
1984	65.7	69.1	51.3	57.9
1985	64.9	68.7	48.7	55.5
Polio, 3 doses				
1983	57.0	61.9	36.7	47.7
1984	54.8	58.4	39.9	48.7
1985	55.3	58.9	40.1	47.1
<i>Family Record^a</i>				
DPT, 3 doses				
1985	87.0	88.5	75.2	79.6
Polio, 3 doses				
1985	75.7	77.5	61.5	68.9

^aWritten records were available from 35% of the white respondents, and 19% of all others.

Source: NCHS, 1989a.

TABLE B-12
Recommended Immunization Schedules

[illegible]

*Recommended for females only. **Recommended only for those not immunized earlier. Po = Polio D = Diphtheria P = Pertussis
T = Tetanus BCG = Bacillus Calmette-Guerin MMR = Measles-Mumps-Rubella Source: Survey responses

TABLE B-13

Amount of Monthly Payment for Two Children
as a Children's Allowance, 1983

10-13% of average monthly wage

Belgium
Germany (FRG)
France
United Kingdom
Netherlands

2-5% of average monthly wage

Denmark
Ireland
Norway
Switzerland

Source: Ierodiaconou, 1986.

TABLE B-14

Poverty Rates Among One-Parent Families, 1979-81

Study Countries	% Children in One-Parent Families	% Poverty in One-Parent Families
U.S.	14.7	51.0
Germany (FRG)	5.5	35.1
Norway	15.7	21.6
Switzerland	11.6	12.9
United Kingdom	8.0	38.6
Others		
Canada	9.6	38.7
Sweden	14.8	8.6

Source: Smeeding, Torrey, & Rein, 1988.

TABLE B-15

Reduction of Poverty Gap Among Households with Children

Study Countries	Percentage of Total Poverty Gap Reduction			
	Poverty-Gap Reduction Rate*	Social Insurance	Means-Tested Program	Children's Allowance
U.S.	0.65	29	71	—
Germany (FRG)	1.06	68	11	21
Norway	1.05	86	3	11
Switzerland	0.91	93	7	—
United Kingdom	1.17	38	38	24
Others				
Canada	0.85	38	48	14
Sweden	1.76	52	37	11

*Number of poor receiving public transfers (pre-tax/pre-transfers) divided by total poverty age group.

Source: Smeeding, Torrey, & Rein, 1988.

TABLE B-16

Relative per Capita Social Spending by Age, 1980

Social spending for the elderly is indexed at 100 for each country.

Country	Age Group	
	0-14	65 & Older
United States	26.25	100
Canada	37.74	100
France	38.03	100
Germany (FRG)	31.65	100
Italy	26.32	100
Japan	42.55	100
Sweden	42.74	100
United Kingdom	46.95	100

Source: Recalculated from O'Higgins, 1988.

TABLE B-17
Employment Rates for Mothers of Preschool Children, 1985

	% Employed	% Employed Full-Time
United States ^b	57	46
Belgium	52	39
Denmark	73	45
France	50	38
Germany (FRG)	32	16
Ireland	19	14
Netherlands	21	4
Norway ^a	50	NA
Spain ^a	20-30	NA
United Kingdom	29	8

a. Tietze & Ufermann, 1989.

b. Palacios, 1989; Olmsted, 1989.

Source: Moss, 1988.

TABLE B-18
Employment Rates for Lone Parents of Preschool Children, 1985

	% of All Lone-Parent Households with Children that Include Preschool Children	Employment Rate Among Lone Parents
United States*	15	59
Belgium	4	58
Denmark	15 (est.)	66
France	7	52
Germany (FRG)	9	40
Ireland	4	11
Netherlands	7.5	16
Norway	NA	NA
Spain	NA	NA
United Kingdom	9.5	17

*Kahn & Kamerman, 1987.

Source: Moss, 1988.

TABLE B-19
Participation Rates and Fees for 4-Year-Olds in Preschool, 1985

	% of 4-Year-Olds in Care	Fees
United States	39 ^a	private: \$45-125/wk (est.) ^b
Belgium	nearly all	food only
Denmark	61	22% of cost
France	nearly all	food only
Germany (FRG)	80	varies among states
Netherlands	nearly all	food only
Norway	37	21% of cost
United Kingdom	73	food only

a. Select Committee, 1989.

b. Kamerman, 1984.

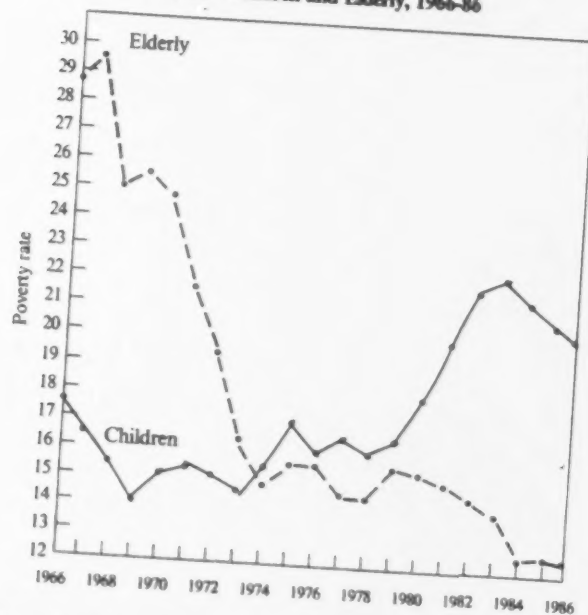
Source: Tietze & Ufermann, 1989.

TABLE B-20
Number of Sick Days per Person per Year, by Age,
United States

Age Group	Bed-Disability Days		
	1962-63	1970	1980
Younger than 17	4.9	4.4	5.2
65 years and older	15.9	13.9	13.8

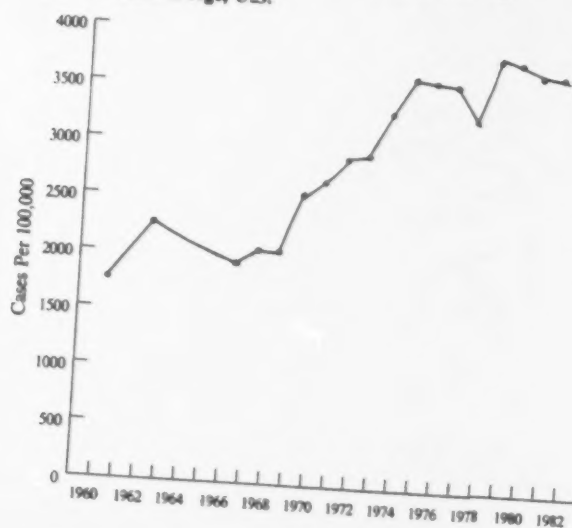
Source: Jencks & Torrey, 1988.

FIGURE B-1
Low-Income Persons: Children and Elderly, 1966-86



Source: Smolensky, Danzinger, & Gottschalk, 1988.

FIGURE B-2
Prevalence of Activity Limitations for Children Younger than 17 Years of Age, U.S.



Source: Newacheck, Budetti, & Halfon, 1986.